FLIGHT
The AIRCRAFT ENGINEER & AIRSHIPS

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Founder and Editor: STANLEY SPOONER
A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport
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Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list :—

1925

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May 7	....	Aero Golfing Soc. Spring Meeting, Worplesdon.
May 8	....	Capt. W. H. Sayers, Hons. Member: "A Résumé of Achievements in Aviation during the Past Year," before I.Ae.E.
May 20	....	Visit to the National Physical Laboratory, Teddington, by I.Ae.E.
May 21	....	Aero Golfing Soc. Match, Cassiobury Park.
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May 29	....	Aero Golfing Soc. Match, Oxhey.
June	....	Race Meeting at Hendon Aerodrome.
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June 7	....	Gordon Bennett Balloon Race, Brussels.
June 25	....	Aero Golfing Soc. Match, Mid-Surrey.
June 27	....	Royal Air Force Display, Hendon.
July 3–4	....	King's Cup Race.
July 26–Aug. 9		Vauville Light 'Plane and Glider Meeting.

EDITORIAL COMMENT.

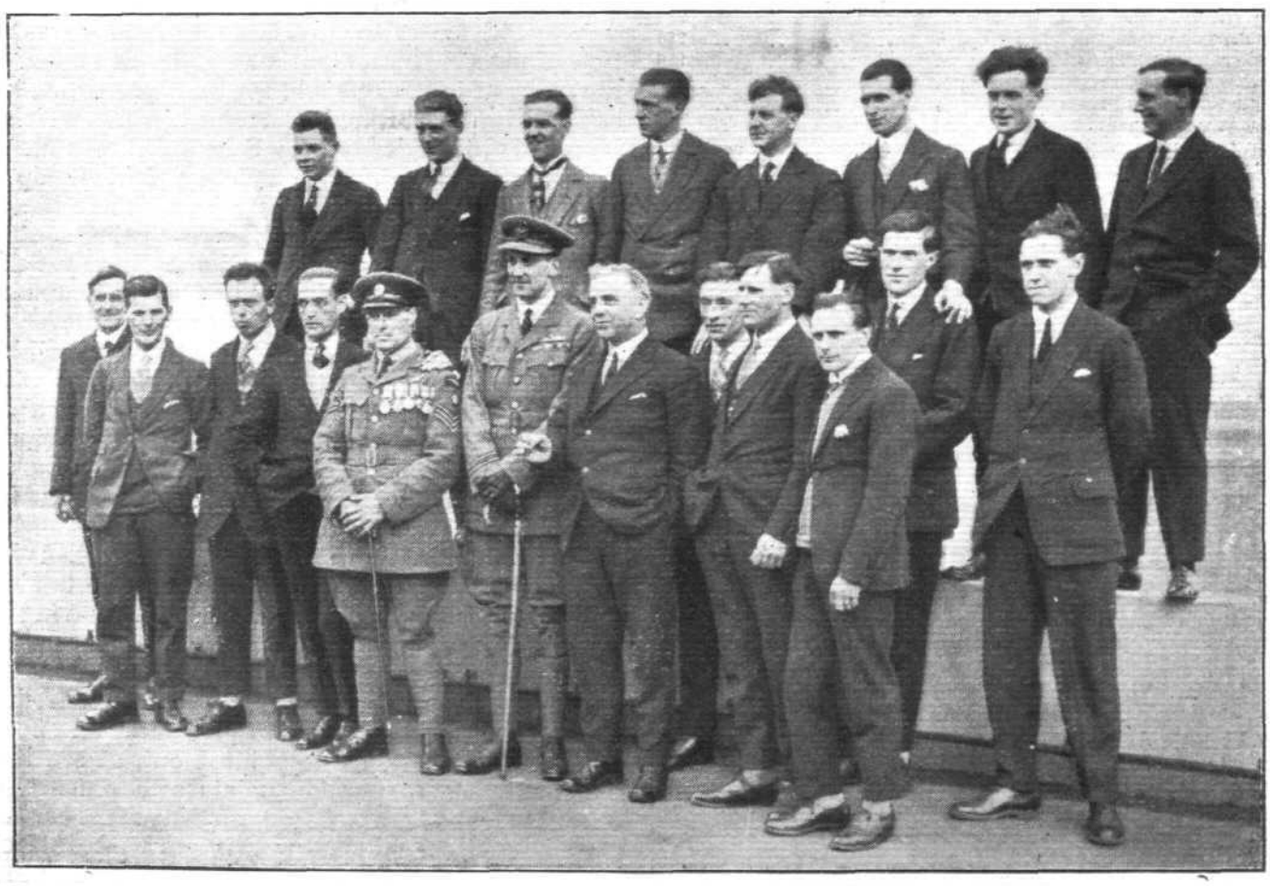
IN spite of its title, "The Position of the Airship in Aerial Transport," the paper read by Commander Burney before the Institution of Aeronautical Engineers, and the discussion following the reading of the paper, might have been better entitled "The Problem of the Mooring Mast." However, as Col. Moore-Brabazon pointed out, a great deal of attention was quite rightly given to this subject, which must of necessity play a very important part in any airship scheme, whatever type of mooring mast is ultimately decided upon. At the moment it can be said that there are two schools, as far as mast-mooring is concerned. One, which has been called the Air Ministry School, believes that the proper place at which to attach a rigid airship to a mooring mast is in the extreme nose, where the cone attachment forms more or less a "point contact." The other, which we may call the Burney School, and whose case was admirably put by Commander Burney in his lecture, considers that whatever type of mast-mooring is chosen, it should be one which is applicable to mooring to a mast on land as well as to one placed on some suitable vessel such as a monitor. This, if we have understood the argument correctly, is the main point in Commander Burney's scheme. In his lecture Commander Burney pointed out that with the Air Ministry type of mooring, guy ropes are required for stopping what he called "sailing at the mast," *i.e.*, a yawing from side to side as the airship is approaching the mast after having been attached to the mast cable. Now the point made by Commander Burney was that in land operations these guy ropes are attached some 1,000 ft. out from the base of the mast in order to give them an effective angle. Obviously, as he pointed out, at sea it will be impossible to provide points so far apart, and means must be found whereby any guy ropes or similar device used for stopping yawing must be attached to the vessel upon which the mast is built, or to the mast itself. It is this consideration which has led up to the suggested "forked" mooring masthead, in which two long arms, or platforms, approximately

Airships

75 ft. each, fork around the nose of the airship, contact being made between the arms and the airship framework at such a distance back from the nose that the diameter of the airship is approximately 50 ft. at this point. The cables securing the airship to the mast form a letter " M " as seen from in front, the inner ones running to the masthead and the outer to the arms. From the side the two sets of cables also form angles with each other in such a way that the airship is steadied both laterally and fore and aft. This arrangement, it is expected, will not only take the place of the guy ropes in the land mast, but will have the further advantage that the masthead, being able to turn around, will enable the airship to approach the sea vessel at an angle, such as might occur when the vessel was swung by a strong tide out of the direction of the wind.

This, briefly, is the case of the " Burney School," and it must be admitted that it has much to recommend it. The discussion following the reading of Commander Burney's paper the other night showed, however, that it is considered by many that the " forked " mooring is or may be liable to impose severe stresses on the airship structure. It is, of course, well known that when an airship is at the mast and swinging at her moorings, there is nearly always a slight roll. Now the adherents of the " Air Ministry School " believe that when the airship is tending to roll, and is prevented from doing so by the " forked " masthead arms, a very severe twisting stress may be imposed, which might even lead to fracture of the framework. Another objection raised against this type of masthead was that with its heavy weight (some 18 tons) it might cause a serious upsetting of the vessel on which the mast is built. Commander Burney argued that in the first place calculations had shown that by removing the gun turrets, etc., from a monitor and substituting a mast with this gear, the metacentric height was actually raised 1 ft. 6 ins., so that presumably there would be no great difficulty on that score. Secondly, he said that probably in most cases the monitor would be run up on the mud, and would thus be more or less equivalent to a land mast gear. Against the latter argument it might be said that if that is so, then the " Air Ministry Type " of guy ropes would probably be feasible, and the need for the " forked " mast would be absent.

Another feature of the Airship Guarantee Co.'s airship, R. 100 which was criticised was the placing of the control cabin in the extreme nose, and inside the hull. While this arrangement does undoubtedly save head resistance, it was argued that it would be a dangerous position, as the nose is the portion of the airship most likely to foul the mast during mooring operations. Personally, we think that the chief objection to any forward position is that the helmsman has, in addition to the work of operating the elevators and rudders, to haul back and forth control cables hundreds of feet in length every time he trims a control surface. This seems a waste of energy, and it should be possible to have the controls arranged in the stern with a look-out in the nose. On the mooring mast question we do not feel inclined to express an opinion. The matter is one that must be thoroughly thrashed out by experts before a final decision is taken.



OFFICIAL CONGRATULATIONS : Flight-Lieut. R. S. Booth and the crew of R.33 were this week officially congratulated upon their plucky fight with the gale when recently they succeeded, in spite of heavy damage to the airship, in bringing her safely back to Pulham airship station after she had torn away from the mast.

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ANTI-AIRCRAFT RECRUITING

An extensive recruiting campaign in connection with the air defences of London opened this week with, as far as can be judged by the first few days' operations, promising results. The campaign started—and started very well too—with a "rally" at the Mansion House, where the Lord Mayor, accompanied by the Lady Mayoress, and in the presence of hundreds of spectators, inspected an anti-aircraft gun section from Wallbrook, manned by a detachment from the 53rd Brigade under the command of Capt. H. R. Howie. First of all the section gave a display of loading, firing, etc., a Bristol Fighter "attacking" high up overhead the meanwhile.

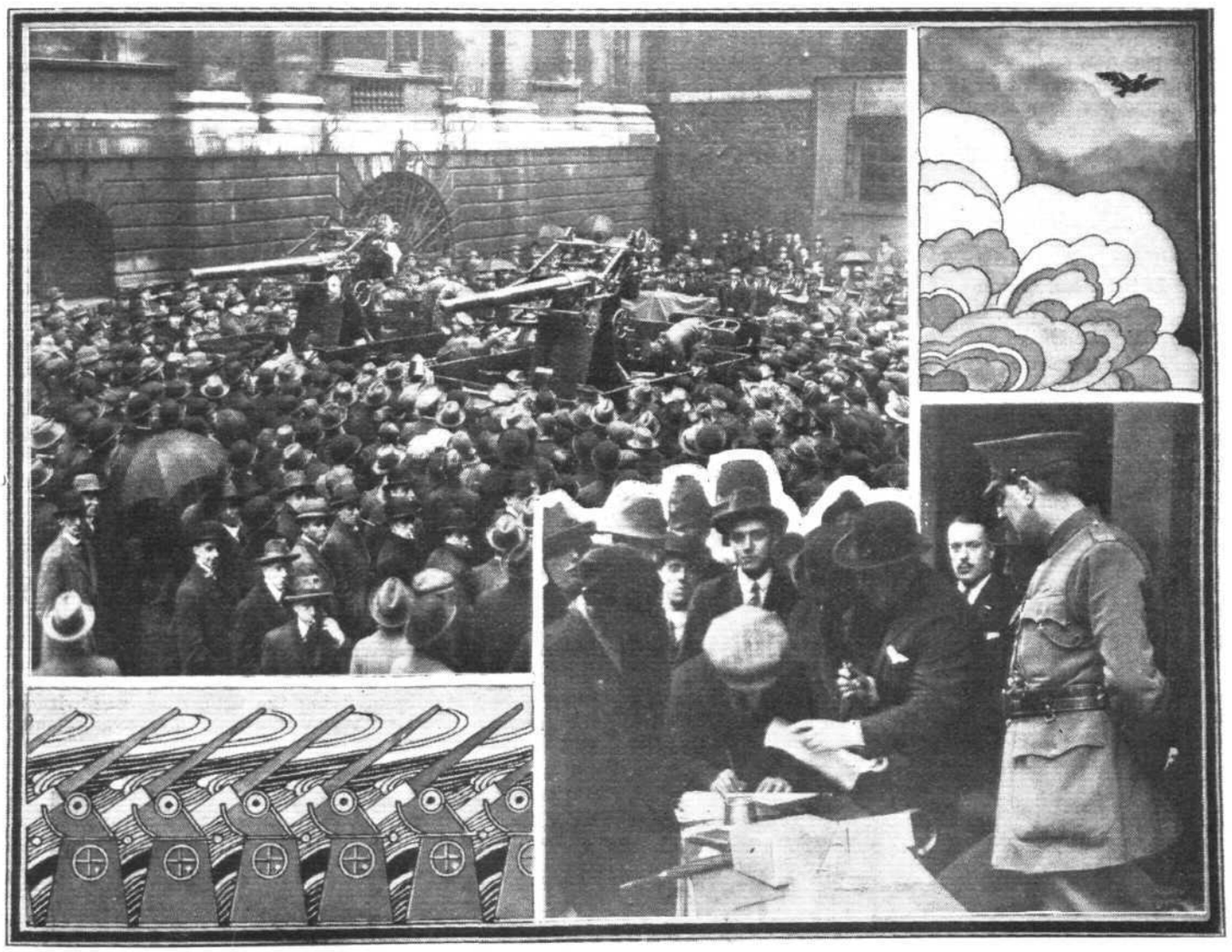
The 53rd Brigade is composed of the following batteries:—157th City of London (Insurance), 158th City of London (Banks), and 159th (Lloyds, City of London). The 54th, commanded by Lieut.-Col. E. P. Warlters, is composed of the 160th and 161st Batteries (recruited largely from Wandsworth and Putney) and the 162nd, which is being raised with the support of the directors of John Barker and Co.

Large numbers of recruits lined up to "sign on" on this occasion, and it looked as if the 1,500 men needed would be forthcoming if the same enthusiasm is shown throughout the week's campaign. This 1,500 is required for the following anti-aircraft Brigades (London): 51st (County), 52nd (County), 53rd (City), and 54th (City).

In the evening a special display was arranged in the form of a mimic air raid on London. Hyde Park was the main scene of operations, and at an early hour thousands of people gathered round the various gun and "gas" platforms, searchlights, listening posts, and listening-in posts. There was plenty to see and hear, for not only did the various gun and searchlight sections go through their "drill," but numerous speeches were made, heard by many through the medium of loud speakers (which from time to time switched over to 2 LO).

Similar scenes were to be seen at other open spaces, such as Clapham Common, Wimbledon Common, Brook Green, Horse Guards Parade, etc. As darkness fell the raiding aeroplanes approached over London, and the various stations below went through the usual operations of "picking up," spotting, range-finding, etc. Unfortunately, big bangs were barred, which, together with poor visibility, somewhat lessened the realism of the "attack."

Demonstrations of a like character were carried out during the days following, and will, we believe, continue through the week, when, also, temporary recruiting offices will be open from 12 noon to 2 p.m. at the Mansion House, and from 7 to 10 p.m. at the Horse Guards, Kensington Town Hall, Hackney Town Hall, Hammersmith Town Hall, Lambeth Baths, Wandsworth Town Hall, Clapham Common Station, and St. Mark's Institute, Ladbroke Grove. The permanent headquarters of the City of London brigades are at the Drill Hall, Lytton Grove, Putney, and of the County of London brigades at Duke of York's Buildings, near Sloane Square.



LONDON'S ANTI-AIRCRAFT DEFENCES: Our photographs show the crowds inspecting anti-aircraft guns at the Mansion House this week, and, below, recruits enrolling in the Anti-Aircraft Section of the Territorials.

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Sir Sefton Brancker on "Commercial Aviation."

On Wednesday, May 6 next, Air Vice-Marshal Sir Sefton Brancker, Director of Civil Aviation, will deliver a lecture on "Commercial Aviation," at the Royal Society of Arts, John Street, Adelphi, London. The chair will be taken by the Duke of Sutherland.

Supermarines for Australia

The Australian Minister of Defence has confirmed the report that four Supermarine "Seagull" amphibian flying boats have been ordered for the Australian Air force. The amphibian type of machine has been chosen in order to obviate the necessity of establishing a seaplane base at Sydney.

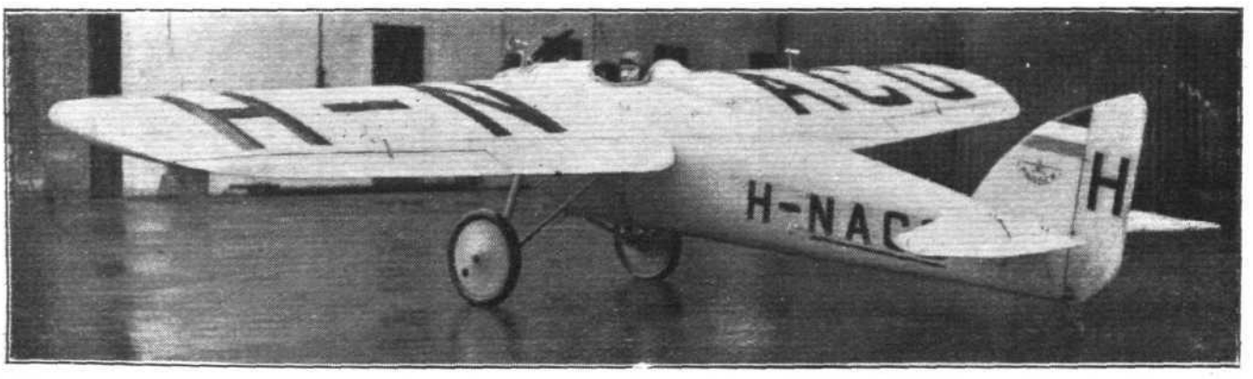
THE PANDER LIGHT MONOPLANE VISITS CROYDON

IN our issue of February 19 last we published a general description of the Pander light monoplane, constructed by H. Pander & Zonen, of The Hague, Holland, and this week we are able to give our readers our own personal impressions of this excellent little machine's flying qualities. Since the Pander light monoplane was exhibited at the Paris Aero Show last December, the Pander firm have been carrying out an extensive "propaganda" tour in various parts of the Continent, and numerous demonstration flights have been carried out with a view to showing that it is not in constructional matters alone that this machine can exhibit good points. This week it was flown over to Croydon, where on Tuesday we had the pleasure of seeing for ourselves how it liked typical English atmospheric conditions.

It should be mentioned that wherever the Pander is taken the makers are not content with just giving a few demonstration flights—with their own pilot up—but they place the machine at the disposal of any pilot who would like to try her out for himself—an original and, we think, quite an excellent scheme. Previous to the machine's visit to this country some 70 pilots—French, Belgian, Dutch, etc.—have had the opportunity of flying the little 'bus, and without exception all have been very enthusiastic about the splendid way the machine behaves in the air.

THE PANDER LIGHT MONOPLANE AT CROYDON: This side view gives a good idea of the size of the machine.

The Pander Light Monoplane at Croydon: The Air Ministry is interested. General Brancker (*in situ*), on the right Major Buchanan, and behind Col. Darby, with a watching brief.



THE PANDER LIGHT MONOPLANE WITH ANZANI ENGINE: Three-quarter rear view.

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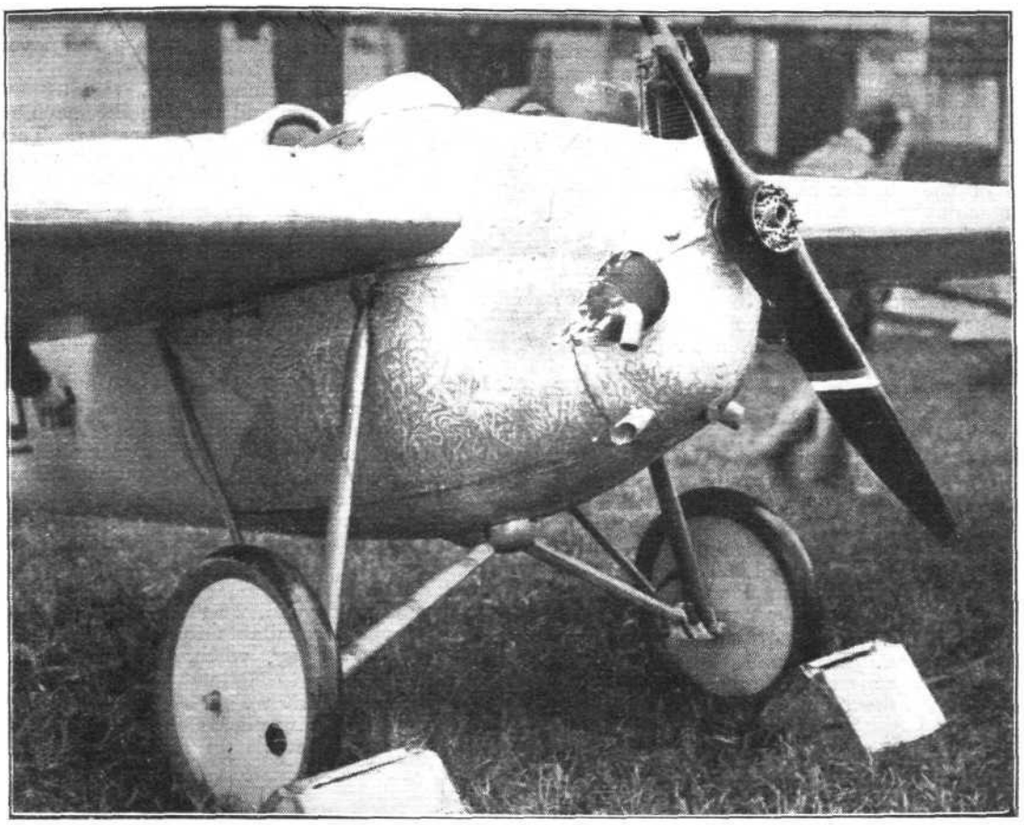
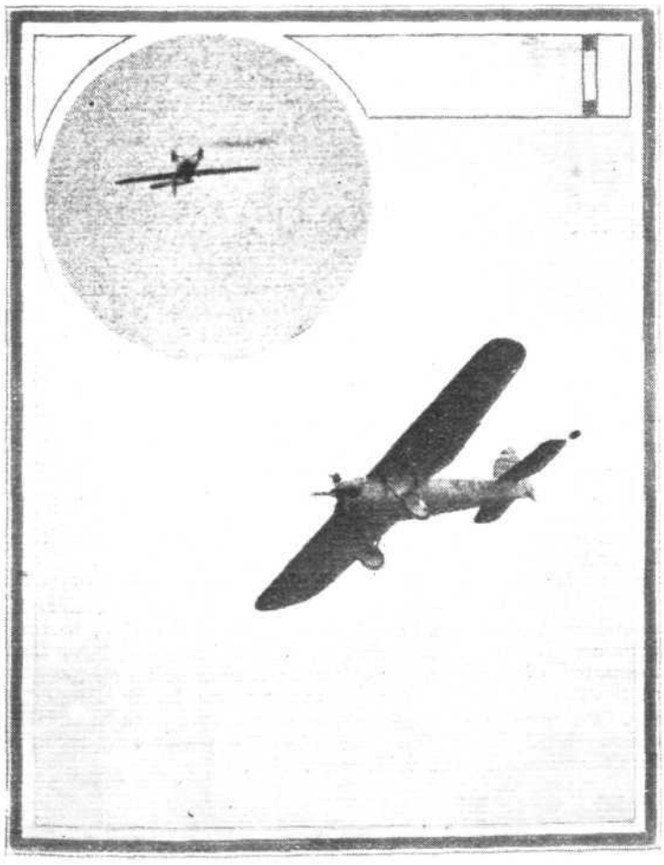


The Under-carriage of the Pander light monoplane, and the neat engine cowling around the Anzani engine.

Before giving our impressions of the Pander's performance at Croydon last Tuesday, it may be as well perhaps if we just briefly refer to the general features of the machine—although, as we say, we have already described it fairly fully in FLIGHT. The Pander "Type D" is a single-seater cantilever monoplane following more or less orthodox aeroplane practice—it certainly cannot be classed with the "motor-assisted glider" type of design and construction. The fuselage is of the monocoque type, almost oval in cross-section, built up of laminated wood formers and covered with three-ply. The wings are of one-piece, thick-section construction, mounted on the top longerons of the fuselage, by means of long U-bolts securing the main spars, and are very easily dismantled for storage or transport, and as easily erected. The tail unit is of similar construction to that of the wings, and is similarly mounted on the fuselage. The under-carriage is of the inclined divided axle type—the axle ends



The Pander monoplane coming in to alight after a flight at Croydon, and, inset, a photograph of the machine flying upside-down.

The Pander Team: In the centre Mr. H. Pander and, on the right, his pilot Lieut. Rapellier. Mr. Maurice Piercey (left) also gave a demonstration on the machine.

being attached direct to the undersides of the fuselage—well sprung by elastic shock absorbers. A steerable tail skid facilitates manœuvring on the ground.

A 25 h.p. 3-cyl. air-cooled radial Anzani engine is very neatly installed in the nose of the fuselage, only the main portions of the cylinders projecting outside the metal cowling. As we have had occasion to remark before, the workmanship throughout the construction of the Pander monoplane is excellent. The span of this machine is 26 ft. 3 ins. and the overall length 16 ft. 3 ins., while the weight, empty, comes out at 420 lb. Its speed range is about 30-75 m.p.h.

Now as to the machine's performance in the air. We arrived at Croydon on Tuesday morning just in time to meet a heavy rainstorm—pardon, April shower!—and found the Pander sheltering its nose in the Custom's-counter hut. After waiting a short while—during which time we had a chat with Mr. Pander and his pilot, Rapellier—the rain moderated somewhat, and the little 'bus was wheeled into the open, head to the very stiff north-east wind.

Then M. W. Piercey—the well-known Croydon pilot who flew the "Wee-Bee" light 'plane so well last year—got into the pilot's seat, and after a brief warm-up of the engine, started off for the first flight, into a driving shower of rain. After a remarkably short run the Pander rose gracefully into the air and climbed in a very few moments to 1,000 ft. or so. Then, turning back in the opposite direction, Piercey commenced a series of evolutions—sharply banked turns, rolls, etc.—which the little 'bus executed in an extraordinarily even and apparently effortless manner. Back and forth Piercey flew for some 10 minutes or so, the graceful appearance of the machine and its steady flight, in spite of the extremely unfavourable weather conditions, obviously impressing those who watched its performance from the ground—amongst whom, of course, was Sir Sefton Brancker, our enthusiastic Director of Civil Aviation, who seems never to miss anything happening in the aviation world.

Piercey then brought the machine down, making an excellent landing not very far off, and taxying the machine back again, he then handed it over to M. Rapellier. This pilot, who managed to get into the cockpit without the aid of a shoe-horn, took the machine off after the fashion of that popular "amusement" to be found at Wembley known as the "wiggle-woggle." Then, once up, he flew back in a series of sharply, but very evenly, executed rolls—the machine, as far as we could judge, not losing any height the meanwhile. We were next treated to some thrilling spins, during one of which we learnt afterwards, the compass came adrift and did some stunting on its own inside the fuselage!

By this time the weather was looking very black, and after a really magnificent performance the Pander was brought to earth once more. Rapellier had no sooner landed—and a very pretty landing it was, too—than a heavy hailstorm put an end, for the time being, to further demonstrations. Although the very bad weather conditions rather spoilt the demonstrations, in a way it was, we think, a blessing in disguise, for it certainly brought out the Pander's good points—proving clearly that it is a real aeroplane, and not merely a fair-weather "toy."

The Pander light monoplane will, we understand, remain at Croydon—where it will be available for pilots to "try their hand at it"—until Friday, when, all being well, Rapellier will be flying it back to Holland. In conclusion, we would like to point out that we understand that this remarkable little machine is being placed on the market at the very reasonable figure of £450.

THE ROYAL AIR FORCE MEMORIAL FUND

A MEETING of the Executive Committee of the above fund was held at the offices, No. 7, Iddesleigh House, Caxton Street, London, S.W. 1, at 3.30 p.m. on Wednesday, April 22. In the unavoidable absence of the Chairman, Sir Charles McLeod, Bart., Hon. Treasurer, occupied the chair, and there was a full attendance of members of the committee. The usual list of donations and subscriptions received since the last meeting of the committee was submitted. The list of grants made since the same period by the Grants Sub-Committee and by the Secretary, and amounting in all to the sum of £1,066 11*s.* 5*d.*, was approved by the committee. An application for assistance from the Salting Benefaction, put forward by the Grants Sub-Committee, and concerning the education of an officer's son, was approved by the Executive Committee. It was announced by the Secretary that the annual reports for 1924 had been distributed to everyone concerned and to the press, between March 20 and 25.

Two applications for grants towards War memorials of fallen members of the Air Force, from the Royal Military College, Sandhurst, and from the committee of the Scottish National War Memorial in Edinburgh, were considered by the Executive Committee, but pending further information regarding both matters, final decision was deferred until the next meeting of the committee, which will be held on Wednesday next, July 1.

A FAIREY CLUB DINNER AND CONCERT

THE fifth annual dinner and concert of the Fairey Social and Athletic Club was held on April 24, at the Park Hotel, Hanwell, and, as usual, was a very great success. The chair was taken by Mr. C. R. Fairey, who was accompanied by Mrs. Fairey and supported by Col. Vincent Nicholl, Major T. M. Barlow, Capt. Norman Macmillan, Mr. C. E. R. Osman, Mr. W. Broadbent, Mr. A. Amos, Mr. A. C. Barlow, Mr. A. J. Toms, and Mr. G. C. Owers (General Secretary). During the dinner the Fairey Works Band played selections, while the 140 members of the club did justice to an excellent menu.

Mr. C. R. Fairey, in proposing the toast of "The Club," said how pleased Mrs. Fairey and he were to be present once more at the club's annual dinner, and he referred to the favourable position of the aircraft industry during the present trying times. They had worked under different Governments, and it did not matter which party was in power, all were determined that, as far as this country was concerned, they would not be satisfied until our Air Force and defences were brought up to modern requirements, and that when we had got through all our troubles and times became normal once again, the aircraft industry would be as great a factor in peace as it had been in war.

He congratulated the club and the General Secretary, Mr. G. Owers, on the record of their past season's work, and stated, amidst applause, that he and the directors would in the future, as in the past, take the greatest interest in the different activities of the club. They were going to have a pavilion erected this year, and also a hard tennis court laid down. The present canteen would be replaced by a modern structure, with dressing rooms and other improvements added. He asked all present to rise and drink to the toast "The Club," and coupled with it the name of the General Secretary, Mr. G. Owers, whose work on behalf of the club was greatly appreciated by all concerned.

The toast was responded to with great enthusiasm, and the General Secretary, in reply, thanked Mr. Fairey and all present for the cordial way in which the toast was received. He then gave the season's records for the cricket, football and tennis sections, and also referred, on the social side, to the popularity of the Fairey dances. Their latest venture, the formation of a dramatic society and their first appearance at the Park Theatre, Hanwell, had received hearty support, and they were to be congratulated on the success of their first effort. Mrs. Fairey then presented the prizes and medals to the winners in the various sections.

Sir Samuel Hoare in Italy.

SIR SAMUEL HOARE, Secretary for Air, who, with the Colonial Secretary, Mr. Amery, has been making an aerial tour of the East, is now in Italy.

It is reported that on April 28 he visited the aerodrome at Montecellio, where he was received by Gen. Bonzani, Italian Vice-Commissioner of Aviation, and several high officials of the Italian Air Force. It was arranged that he should journey by airship to Civita Vecchia on April 29, where he will witness the Italian Air Manœuvres.

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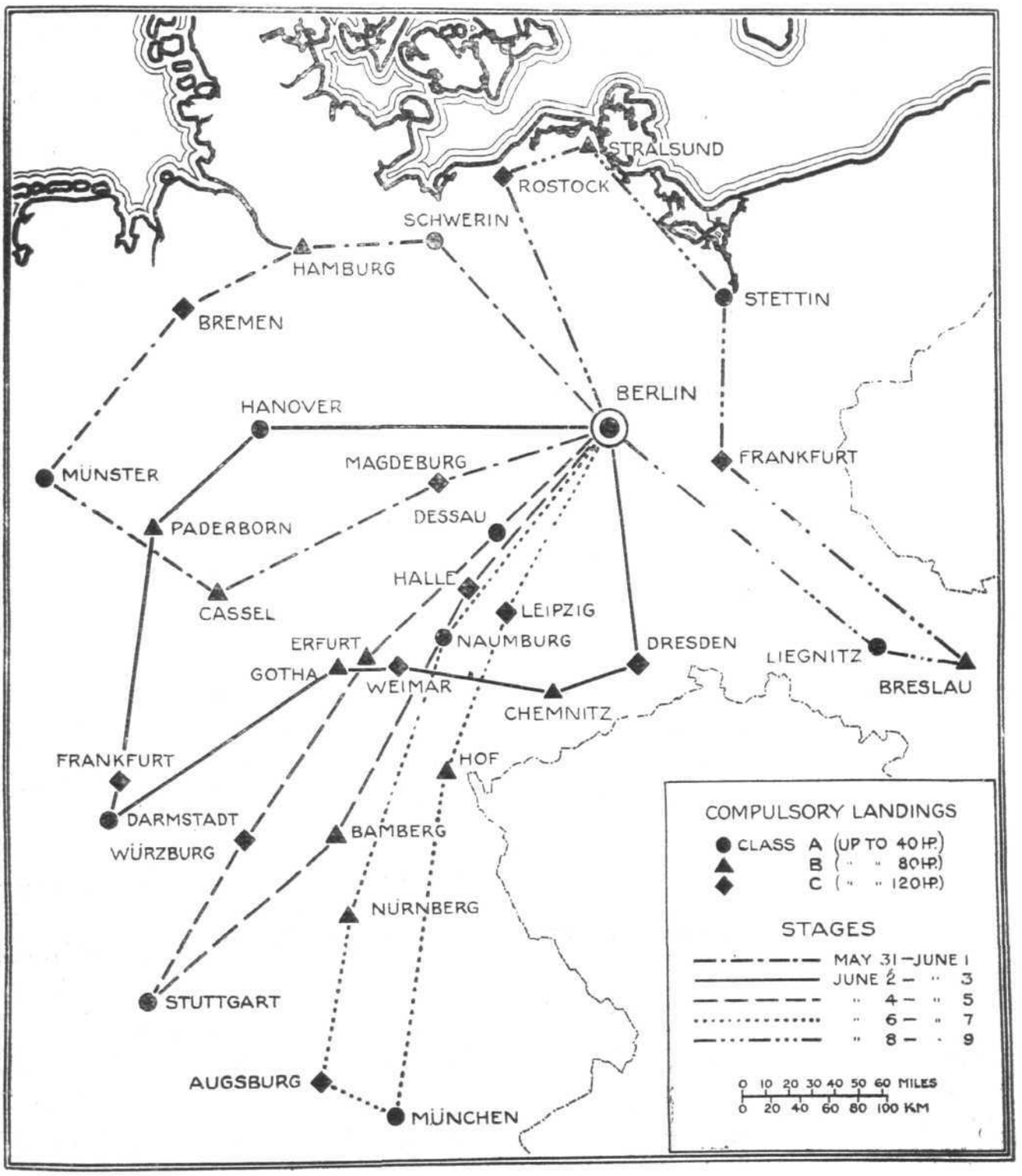
"DEUTSCHER RUNDFLUG, 1925."

A Wonderful German Competition

What promises to be one of the most wonderful aeroplane competitions to be held in Europe during the last 11 years is the "Deutscher Rundflug," or Round-Germany Flight, which, organised by the Aero Club of Germany with the approval of the German Luftrat and in conjunction with other societies of the D.L.V. (Deutscher Luftfahrt-Verband), is to be held from May 31 to June 9. The competition is wonderful not only because of the scientific nature of the formula to which the competing machines have to fly, but also on account of the magnitude of the prizes and the length of the entries list. A prize of 100,000 gold marks is offered by the "B.Z." (*Berliner Zeitung*), and in addition there is to be a Boelcke prize of 50,000 gold marks and a Richthofen prize of 45,000 gold marks, in addition to a certain number of smaller prizes placed at the disposal of the German Aero Club, so that the total amount of the money prizes will probably reach the imposing figure of £15,000. When it is remembered that Germany is tied hand and foot, is limited by the Versailles Treaty to aeroplanes of a certain power and carrying a certain limited amount of fuel, and with a limited performance as regards speed and ceiling, it is little short of astonishing to find that the entries list reaches the figure of 92.

The aeroplanes taking part in the Round-Germany Competition are divided, according to horse-power, into three classes: Class A machines, whose engine-power does not exceed 40 h.p.; Class B, not exceeding 80 h.p.; and Class C, not exceeding 120 h.p. Final data are not yet available, but



THE ROUND-GERMANY FLIGHTS: Sketch-map showing how the various circuits overlap in order to enable as many German towns as possible to see the competing machines. On the last circuit, Görlitz had originally been intended as a turning point and control, but owing to the unsuitable nature of the aerodrome Liegnitz was chosen instead. Machines start from and finish at the Tempelhofer Aerodrome, Berlin, in each circuit.

Table of Machines entered for "Round-Germany" Competition

No. and Entrant.	Type, Engine and H.p.
1 Messerschmitt	M. 17, A.B.C., 24.
2 Messerschmitt	M. 17, A.B.C., 24.
3 Aerotechnical Soc., Lübeck	Parasol Mono. S. I, Siemens, 55.
4 Aerotechnical Soc., Lübeck	Parasol Mono. S. II, Siemens, 55.
5 J. v. Nathusius, Frankfort	Bahnbedarf, Blackburne, 14½.
6 W. Waltking, Gut Jennewitz.	Albatros L. 59, Siemens, 55.
7 Sportflug Co., Hanover ..	Heinkel H.D. 21, Mercédès, 120.
8 Academic Flying Group, Darmstadt.	"Mohamed" Lt. Pl., Hirth, 20, or Blackburne, 14½.
9 Junkers Aircraft Works ..	Junkers K. 16, Siemens, 77.
10 ,, ,, ..	Junkers K. 16, Siemens, 77.
11 Junkers Airlines	Junkers T. 26 I, Junkers LIa, 78.
12 Junkers Aircraft Works ..	Junkers T 26 II, Junkers L IB, 85.
13 Junkers Aircraft Works ..	Junkers T 29 I, Junkers L IB, 85.
14 ,, ,, ..	Junkers T 29 II, Junkers L IA, 78.
15 Bäumer Aero, Ltd.	B. II Biplane, Wright L4, 60.
16 ,, ...	B. II Monoplane, Wright L. 4, 60.
17 Dietrich Aircraft Works ..	D.P.IIA biplane, Siemens, 77.
18 ,, ,, ..	D.P. VIIA monoplane, Siemens, 55.
19 ,, ,, ..	D.P. VIIA monoplane, Siemens, 55.
20 Junkers Airlines	Junkers A. 16B, Junkers L IA, 78.
21 Junkers Airlines	Junkers A. 16B, Junkers L IA, 78.
22 Aircraft Co., Stralsund ..	LFG V. 52, Siemens, 55.
23 ,, ..	LFG V. 42, Mercédès, 100.
24 ,, ..	LFG V. 40, Siemens, 75.
25 ,, ..	LFG V. 39, Mercédès, 100.
26 ,, .	LFG V. 44, Bristol "Lucifer," 100.
27 Udet Aircraft Works ..	U. 10, Siemens, 80.
28 ,, ..	U. 8, Bristol "Lucifer," 100.
29 ,, ..	U. 12, Siemens, 105.
30 ,, ..	U. 7 "Kolibri," Douglas, 35.
31 ,, ..	U. 7 "Kolibri," Douglas, 35.
32 ,, ..	U. 10, Siemens, 60.
33 ,, ..	U. 12, Siemens, 80.
34 ,, ..	U. 12, Siemens, 105.
35 Otto Bornemann	Dietrich D.P. IIA, 380, Siemens, 75.
36 ,, ...	Dietrich D.P. IIA, 399, Siemens, 75.
37 Bahnbedarf, Ltd.	B.A.G. D. IIA, Anzani 40 or Siemens, 60.
38 ,, ...	B.A.G. D. IIA, Blackburne, 14½.
39 ,, ...	B.A.G. D. II, Blackburne, 14½.
40 ,, ...	B.A.G. D. II, Blackburne, 14½.
41 ,, ...	B.A.G. E. I, Blackburne, 14½.
42 Focke-Wulf Aircraft Works	Focke-Wulf A 16A, Mercédès, 100.
43 ,,	Focke-Wulf A 16A, Mercédès, 100.
44 Bremen Air Traffic Co. ..	Focke-Wulf A. 16, Siemens, 75.
45 Aerotechnical Soc., Spandau.	"Spandau 1," Haacke, 30.
46 Sportflug Co., Stettin ..	Heinkel H.D. 21, Mercédès, 120.
47 Aero-Sports Co., Warnemünde.	"Aero-Sport 1," Mercédès, 120.
48 ,,	"Aero-Sport 1," Mercédès, 120.
49 Hugo Schneider, Chemnitz	Pelzner light biplane, A.B.C., 12.
50 E. Heinkel Works	Heinkel, Siemens, 100.
51 ,, ...	Heinkel, Siemens, 100-120.
52 H. Jakobs, Berlin	C.T. 2 B, Mercédès, 100.
53 Martens Flying School ..	"Motoritz" monoplane, ?.
54 ,, ..	"Windhund" monoplane, A.B.C., 27-35.
55 Martens Fl. Sch.	"Windhund" monoplane, A.B.C., 27-35.
56 General Germ. Sports Soc., Berlin.	Caspar C. 26, Bristol "Lucifer," 100.
57 Caspar Works	Caspar C. 23, Mercédès, 75.
58 ,, ...	Caspar C.T. 2, Mercédès, 100-120.
59 ,, ...	Caspar C.T. 1, Mercédès, 80.
60 ,, ...	Caspar C. 30, Bolle-Fiedler, 30.
61 ,, ...	Caspar C. 24, Mercédès, 100-120.
62 Sportflug Co., Berlin ..	Heinkel H.D. 32, Siemens, 80.
63 ,, ..	Heinkel H.D. 21, Daimler, 100.
64 F. W. Siebel, Berlin ..	Mercédès-Daimler L. 21, 2 Mercédès @ 19.
65 Daimler Motor Co.	Mercédès-Daimler L. 20, Mercédès, 19.
66 ,, ..	Mercédès-Daimler L. 20, Mercédès, 19.
67 ,, ..	Mercédès - Daimler L. 21 2 Mercédès @ 19.
68 Dinos Dockyard, Warnemünde.	Heinkel H.D. 21, Mercédès, 100.
69 ,, ...	Heinkel H.D. 32, Bristol "Lucifer," 100.
70 Stahlwerk Mark	L.E. II, Mark, 39.
71 ,, ...	M.T. I, Mark, 70.
72 ,, ...	M.T. I, Mark, 70.
73 ,, ...	M.E. II, Mark, 39.
74 Albatros Works	Albatros L. 67, Anzani, 30.
75 ,, ...	Albatros L. 67, Anzani, 30.
76 ,, ...	Albatros L. 68, Siemens, 75.
77 ,, ...	Albatros L. 68, Siemens, 75.
78 ,, ...	Albatros L. 68, Siemens, 75.
79 ,, ...	Albatros L. 69, Bristol "Lucifer," 100.
80 ,, ...	Albatros L. 69, Siemens, 100.
81 ,, ...	Albatros L. 71, Siemens, 55.
82 Luftreederei Magdeburg ..	Heinkel H.D. 21, Mercédès, 120.
83 Maykemper, Frankfort ..	B.A.G. E. 2, Blackburne, 14½.
84 Hellmuth Hirth Experimental Works.	Hirth monoplane III, Hirth, 40.
85 ,,	Hirth monoplane I, Hirth, 20
86 ,,	Hirth monoplane II, Hirth, 40

Late Entries

87 Flying School Auffahrt ..	Dietrich D.P. II, Siemens, 75.
88 Ernst Heinkel, Warnemünde	H.D. 21, Mercédès, 120.
89 Magdeburg Society of D.L.V.	Dietrich D.P. VIIA, Siemens, 55.
90 W.G.L.	Albatros L.30, Mercédès, 120.
91 Rieseler Brothers, Johannisthal.	Rieseler R.R. III, Anzani, 40.
92 Vagel-Grip, Adlershof ..	Greif Sp. 5.

if one sorts the machines out according to the table published herewith, it is found that there are, approximately, 26 machines in Class A, 32 in Class B, and 28 in Class C.

Before going into details concerning the formula upon which the competition is based, it may be stated that in each of the three classes the first prize will be one of 25,000 gold marks, second prize 15,000 gold marks, and third prize 10,000 gold marks.

The manner in which the route over which competing machines will fly has been planned out is interesting, and an examination of the accompanying map will show that by the series of overlapping loops that form the various stages nearly the whole of Germany is criss-crossed by the machines, thus giving a large proportion of the population an opportunity to see the machines and so become interested in flying.

On the first two days of the competition, Sunday, May 31 and June 1, the stage to be flown is Berlin-Schwerin-Hamburg-Bremen-Münster-Cassel-Magdeburg-Berlin, a distance of 972 km. (600 miles). The second stage, starting from Berlin on June 2, is Berlin-Hanover-Paderborn-Frankfort-Darmstadt-Gotha-Weimar-Chemnitz-Dresden-Berlin, a distance of 1,129 km. (700 miles). The third stage, starting on June 4, is Berlin-Dessau-Erfurt-Würzburg-Stuttgart-Bamberg-Halle-Berlin, a distance of 1,024 km. (640 miles). The fourth stage, which commences on June 6, is Berlin-Naumburg-Nürnberg-Augsburg-München-Hof-Leipzig-Berlin, a distance of 1,062 km. (660 miles). The last stage, commencing on June 8 is: Berlin-Liegnitz-Breslau-Frankfort-on-the-Oder-

Stettin-Stralsund-Warnemünde-Berlin, a distance of 1,076 km. (670 miles). Thus the total distance to be covered by the machines during the competition is no less than approximately 3,300 miles. It will therefore be seen that the competition is very much in the nature of a reliability trial. The controls, or compulsory landing places for the various classes are indicated on the map, and it may perhaps be doubted whether the low-power machines will be able to cover some of the distances asked for. Landings between controls are, however, permitted. Even the machines in Class C, the most powerful in the competition, may not exceed 120 h.p., so that even these can be regarded as being certainly not high-power aeroplanes. It is of interest to note that machines which are unable to get round one of the stages may break off at any of the controls, and may continue from there as their starting point on the following stage. The manner in which the loops overlap facilitates this procedure, as in most cases the outward part of one stage is not far from the homeward section of the preceding stage. Machines which take advantage of this permission are, of course, penalised according to the distances missed in any stage. The aerodrom in Berlin from which the start takes place is the Tempelhofer Feld, which was, during Germany's military period, a parade and drill ground, and it is, perhaps, significant of the seriousness with which Germany now attacks air problems that this should have been converted into an aerodrome.

The Award of Marks

A most elaborate system of awarding marks has been evolved, and it will, we think, be found somewhat difficult for the layman to follow, so that although many of the German towns are compulsory stopping places and the machines will thus be calling there, if will be a matter of some difficulty to discover, at any particular control, how the competitors are placed. In fact, it would appear almost impossible to follow the competition as closely as one could a pure speed race, for instance.

The main or fundamental formula itself is simple enough, and reads

$$W = f \times m \times G - S$$

In this formula W (*Wertstrecke*) is the total distance flown in kilometres, or, in other words, the number of marks to be awarded, and the various factors are arrived at after subtracting marks for certain changes, etc. The letter G is important, and stands for *Gesamtsumme* or total sum. It represents the total, in completed kilometres, of the stretches flown by each machine in each circuit. From this are subtracted any penalty marks (S) for making changes in any sealed portion of the machine, the marks to be subtracted for each change being 50 km. for class A machines, 100 km. for class B, and 150 km. for class C.

f is a change-of-pilot factor arrived at in a rather complicated manner, from the formula $f = \frac{A}{G}$, where G is the total mileage, as before, and A is a factor depending upon the number of stretches or portions of the circuits over which the same pilot has flown the machine without change. Full marks are awarded for a pilot completing a circuit, and a fraction of full marks, at progressively decreasing rate, for changes such that, if F_1 be full marks, the rate of award becomes :

$$A = F_1 + 0 \cdot 9F_2 + 0 \cdot 8F_3 + 0 \cdot 7F_4 + \ldots$$

In the case of dual control machines the part-sum F will be multiplied by 0·95 for each stretch over which the passenger took control. It would seem to be a matter of some difficulty to ascertain for how many kilometres this occurred, and pilots are scarcely likely to over-estimate their distances of rest.

A formula somewhat similar to the change-of-pilot one is used to arrive at the factor for engine changes (m) in the fundamental equation. In this case, however, $m = \frac{B}{G}$ where $B = M_1 + 0 \cdot 8M_2 + 0 \cdot 6M_3 + \ldots$, M_1 being full marks for no change, and subsequent changes being progressively penalised.

In the actual competition the machines will carry the numbers indicated in the entries list, but in order that the three classes may be the more readily distinguished it has been suggested that the tails of the small machines (Class A) should be painted white, those of Class B red, and those of Class C blue. At the moment this is, we understand, merely a suggestion, and has not yet been definitely accepted. In any case, once a machine is in the air it does not seem to make a great deal of difficulty what colour it is painted, as all aeroplanes look dark against the sky.

On the first day of the competition, Sunday, May 31, the machines will be started in the order of their class, Class A first, at 4 a.m., Class B at 4.30 a.m., and Class C at 5 a.m. In view of the great number of machines entered, it is proposed to start as many as possible in each class together, the machines to be lined up, with 100 metres distance between them to avoid collision.

The Machines

As we hope to deal with them in more detail later, it is not proposed here to give detailed descriptions. A few notes on some of the more interesting types may, however, be of interest. An examination of the entries list reveals the fact that most of the competing machines are of well-known type, the majority having been described and/or illustrated in FLIGHT from time to time. This applies more particularly to those entered by the larger German aircraft firms, such as the Albatros, Junkers, Udet, Focke-Wulf Dietrich, L.F.G., and Caspar works. Among the light 'planes, *i.e.* in Class A, there would, however, appear to be several new types, or at any rate machines about which very little is known in this country.

The Messerschmitt M.17, for instance, seems to be an unknown quantity, but it is of interest to note that it will be fitted with A.B.C. "Scorpion" engine. The Academic Flying Group of Darmstadt has entered the "Mohamed," which took part in last year's Rhön meeting, and there will be a couple of Udet "Kolibris" with Douglas engines. Herr Bottsch will fly his famous Bahnbedarf BAG E.I, with Blackburne engine, on which he made his flight from Darmstadt to Berlin in three hours and on which also he won the Zugspitzen flight.

Herr Arthur Martens' "Windhund" from last year's Rhön will be present in two examples, but neither is to be flown by Martens himself, who will pilot No. 53, the "Motoritz" monoplane. We have no data relating to this machine, but it may be recollected that Martens had two monoplane gliders, "Max" and "Moritz," somewhat similar in design to the historic "Vampyr," and the name "Motoritz" seems to indicate that the light 'plane will be a "Moritz" fitted with an engine. The engine, by the way, will be a Büssing two-stroke of 12 h.p.

Two extremely interesting machines have been entered by the Daimler Motoren Gesellschaft, *i.e.* Nos. 64 and 67. These will be fitted with two engines each, of 19 h.p., so that there will be an opportunity of finding out how a twin-engined light 'plane compares with a single-engined for reliability. These, incidentally, are the only twin-engined machines in the competition. Just as we are going to press another six machines have been entered, bringing the total number up to 92. The last six have been added to the original list.

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ROYAL TOURNAMENT

THE Royal Tournament, which opens at Olympia on May 28, will have many new features in the programme. The principal change this year is the staging of a pageant on unprecedented lines both in regard to its size and its historic interest, and this will be "The Story of the Guns throughout the Ages," given by selected units of all branches of the Royal Artillery.

The popular item of field-gun work by teams from His Majesty's ships and the Royal Marines is being planned on a new scale, with many novelties with regard to the obstacles which have to be negotiated.

All the schools of physical training in the sea, land, and air forces will be employed in a combined display, showing the modern means by which men are trained and kept fit. In addition, there will be a quarter staff display by the Army Physical Training staff by very skilled performers.

The mounted events will be a special feature this year. The amalgamated 1st and 2nd Life Guards will be responsible for the "Musical ride," and the Royal Horse Artillery drive has been placed in the charge of "O" Battery. There will be a driving display by the Royal Army Service Corps, and some very finished mounted work by men of the Equitation School at Weedon. In addition, there will be jumping for the King's and Prince of Wales's Cups, sword and lance competitions, tent-pegging, and other skilled arms features.

The Royal Air Force will give a drill display, and the Territorial Army will also be responsible for a part of the programme.

AERONAUTICAL RESEARCH COMMITTEE REPORTS

FROM the number of enquiries we receive it appears that there is a desire in aircraft circles to know approximately the contents of the various technical publications of the Aeronautical Research Committee. All the aircraft firms probably receive these reports regularly, whether or not they contain anything of immediate interest or utility. In the case of draughtsmen, however, and others interested in aeronautics, who can hardly be expected to purchase all the reports, the problem of deciding whether any publication interests him is often a difficult one. As it is obviously desirable that the knowledge of aeronautics should be made available to all who take an interest in the subject, we have arranged with the Air Ministry to publish in FLIGHT summaries of all the technical publications as soon as these are issued, or shortly before they are published. All A.R.C. publications can be purchased from H.M. Stationery Offices at Adastral House, Kingsway, London, W.C.2; 28, Abingdon Street, London, S.W.1; York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 120, George Street, Edinburgh, and through any bookseller.

Reports and Memoranda, No. 935 (Ae. 156). Experiments to Measure the Variation, with Speed and Size, of the Forces on an Aerofoil of Thick Section (German Aerofoil, No. 420). By A. Fage, A.R.C.Sc., and W. L. Cowley, A.R.C.Sc. January, 1925.*

One difficulty associated with wind tunnel work is to find the values of the corrections that have to be applied to the results of a model test carried out at a given speed and in a given size of tunnel for the purpose of predicting full-scale aeroplane performance. It is clearly impossible to carry out all wind tunnel tests at the highest velocity and with the largest model in the largest wind tunnel, and with a view to obtaining some estimate of the correction which should be applied, because it is not possible so to test each model, a number of experiments have been made on special wings over a wide range of size and speed. Several experiments of this nature have been previously made on thin aerofoils, but there is not a large amount of information available on the scale effect of thick sections. R. and M. 763 and 894 describe experiments on the thick section R.A.F. 19. The present experiments were carried out on the well-known German section 420, which was one of a series of thick sections tested at Göttingen Laboratory.

Measurements of lift, drag, and centre of pressure were made on No. 420, at incidences ranging from – 8 deg. to 30 deg., on two models, a large model 10 ft. span and 2 ft. chord being tested in the Duplex tunnel at wind speeds 20, 40, 60, 80, and 100 ft./sec., and a model of standard size (3 ft. × 5 ft.) being tested in a 7-ft. tunnel at speeds 40, 60 and 80 ft./sec.

The experiments on the large aerofoil—*vl* range 40 to 200—showed a pronounced drop in the minimum drag coefficient with increase in *vl*. At the highest values of *vl*, there was no appreciable speed effect on maximum lift coefficient. The results for the two models when compared at $vl = 40$ and aspect ratio 6 : 1, were in fairly close agreement on lift, centre of pressure, and minimum drag coefficients, but the drag curves diverged at the higher angles of incidence.

A comparison of the National Physical Laboratory results ($vl = 80$), with others published by Göttingen showed close agreement on lift, except at the stall, where the values of the coefficients were 0·73 and 0·66 respectively. The N.P.L. value of minimum drag coefficient was about 12 per cent. greater than that measured at Göttingen; elsewhere the drag curves were in fairly close agreement.

The present experiments demonstrate that the scale-speed characteristics for this section differ appreciably from those of the thin section aerofoil R.A.F. 15 at maximum lift and minimum drag.

Reports and Memoranda, No. 941. (M.N.8.) Measurement of Vertical Currents in the Lowest Layers of the Atmosphere during Sea-Breezes. By J. Durward, Meteorological Office. Presented by the Director of the Meteorological Office. August, 1923.

Vertical currents in the lower layers of the atmosphere are important for aviation in several ways :—

(*a*) They affect getting off and landing of aeroplanes, and a site with marked vertical currents arising from the local topography may be undesirable on that account as the site of an aerodrome.

(*b*) They affect also the apparent performance of an aeroplane, and a region in which topographical conditions produced marked vertical currents to considerable heights would be undesirable as a region in which tests of aeroplanes should be carried out.

(*c*) They affect gliding; in fact, gliding depends entirely for its success on the utilisation of upward currents and a knowledge of the topographical conditions in which upward currents are marked and the height to which such currents extend is of fundamental importance for the development of gliding and of aeroplanes of low engine power.

It was known that vertical currents must occur over considerable areas during sea-breezes, and it was thought desirable to obtain some more exact idea as to their velocity and probable extent. The single theodolite "tail-method" of doing pilot balloon ascents was adopted on selected occasions at Calshot during the summer of 1923.

The report concludes as follows :—

(1) The sea-breeze found has generally been less than 500 ft. thick; but on one or two occasions it has extended to at least 1,000 ft.

(2) The maximum upward velocity of the air found over any particular minute was 300 ft./min., whilst the maximum downward velocity was in the region of 180 ft./min.

(3) Around Calshot the tendency seems to be in favour of encountering descending air.

(4) In a good many cases descending air has been found at moderate heights, viz., between 1,000 ft. and 2,000 ft., especially when the balloons travel over water (as they generally do).

Reports and Memoranda, No. 942 (Ae. 162). The Royal Aircraft Establishment Control Movement Recorder, Mark III. By D. A. Jones and H. L. Stevens, of the R.A.E., presented by the Director of Scientific Research. October, 1924.

For the improvement of aeroplanes and their flying characteristics, it is of first importance to be able to measure, not only the movements of the aeroplanes, but also the movements of the controls which bring about the various manœuvres through which an aeroplane can be put. There are several methods of attaining this end, and, whereas the Americans have used one instrument on which a number of simultaneous records are kept, the Royal Aircraft Establishment have designed a type of recorder, one of which is fitted to each control. From many points of view, the R.A.E. method appears preferable.

The recording instrument described in this paper gives a continuous record of the movements of any control surface of an aircraft during manœuvres. It has been designed so that it can be directly attached to the surfaces, thus avoiding any eror due to elasticity in the control wires, etc. One instrument has been subjected to some 15 hours' flying, involving about 30 separate flights, and has given every satisfaction. A reproduction of a portion of one of the records obtained is attached to the report.

For research work at the R.A.E. it is proposed to fit these instruments to all the control surfaces of an Avro, together with a gyro instrument to record the rate of turn about the three axes.

Reports and Memoranda, No. 949 (Ae. 169). The Performance of Tandem Systems. By H. Glauert, M.A. Presented by the Director of Research. December, 1922.

The vortex theory of aerofoils has been discussed in several previous papers published by the Aeronautical Research Committee. They are as follows :—

R. and M. No. 723. "Prandtl's Aerofoil Theory."—Glauert.
" " 752. "Some Applications of the Vortex Theory of Aerofoils."—R.A.E.
" " 889. "Experimental Tests on the Vortex Theory of Aerofoils."—Glauert.
" " 901. "Theoretical Relationships for a Biplane."—Glauert.

The theory has many applications, and it is applied in the present paper to find the aerodynamic characteristics of a tandem system of monoplane aerofoils.

It is shown that at small angles of incidence the lift and drag of a tandem system of aerofoils is the same as for a monoplane of the same total area and span. If, however, the tandem system is arranged to secure equilibrium, and if the centre of gravity is fixed by the consideration that the system must not be unstable statically, the maximum lift coefficient obtained is very low, being less than 0·40 compared with 0·55 for the monoplane.

As a preliminary step for the above work it was necessary to obtain expressions for the upwash in front of, and for the downwash behind, a monoplane wing. Details of this analysis are contained in Part II of the report.

* Part of the above work was completed in January and part in November 1924. Rewritten for publication, January, 1925.

FLIGHT

TWO NEW FOKKER MILITARY AEROPLANES

The C.VI Biplane and the D.XIV Monoplane

EVERY few weeks news reaches this country of a new type of Fokker aeroplane to be put through its flight tests. The famous Dutch designer is a most prolific producer of new types, and the peculiar fuselage construction using welded-steel tubing which Fokker has developed and used for many years now, whatever theoretical objections may be raised against it, does have the advantage of avoiding premature standardisation. It is, almost literally, possible to change a design overnight, the Fokker system being extremely elastic. The wing construction also is simple, and geometric enlargements or reductions of an existing wing can be made with little difficulty. Hence, the Fokker works are able to bring out a variety of types in a relatively short space of time.

The two latest types to be produced, of which particulars are available, are the C.VI and the D.XIV. The former is a two-seater biplane intended for artillery spotting, fighting, etc., and is generally similar to the C.V with the exception of the arrangement of the wings. In the new type these are of the "sesquiplan" type, with a large top plane and a diminutive bottom plane, a single pair of V-struts on each side transmitting torsional loads from the top plane via the lower plane to the fuselage, and serving in no way as lift struts.

The engine mounting, of welded-steel tubing, is so arranged as to enable the whole engine unit to be removed and, if necessary, replaced by another in a very short space of time, the attachment to the main fuselage structure being by four bolts only. The C.VI is produced in two types, according to function and engine power. With a 12-cylinder Hispano-Suiza engine of 350 h.p. it is used as an artillery spotter, and has then a speed of 225 km./h. (140 m.p.h.), while the climb to 3,000 m. occupies 11 minutes. These performances refer to the machine carrying 580 kgs. (1,275 lbs.) useful load.

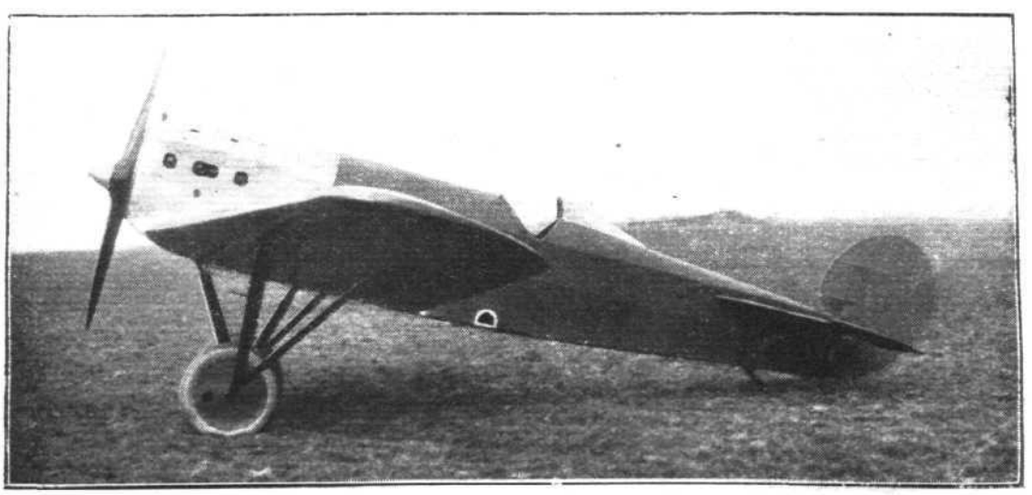
When fitted with the 450 h.p. Hispano-Suiza engine the C.VI is used as a two-seater fighter, and a top speed of 250 kms./h. (155 m.p.h.) is then claimed for it, and a climb of 3,000 m. in 8 minutes and 5,000 m. (16,400 ft.) in 20 minutes.

The second new type of Fokker is a small low-wing monoplane known as the type D.XIV. This is a single-seater fighter, and is shown in our photograph fitted with 300 h.p. Hispano-Suiza engine, with which it has a top speed of 240 kms./h. (150 m.p.h.). The lines are, it will be seen, very "clean," and the view above the wing excellent. The undercarriage is of interest in being strutted to the cantilever wing, a feature which might possibly be objected to on the grounds that a rough landing might strain the wings. The wheel track is very wide for such a small machine.

It is stated that the D.XIV can also be fitted with a 400 h.p. Armstrong "Jaguar" radial air-cooled engine, when a much better performance is obtained.

With the 300 h.p. Hispano-Suiza the top speed is, as already mentioned, 240 kms./h. The climb to 3,000 m. occupies 7 minutes, and in 16 minutes a height of 5,000 m. is reached. With the "Jaguar" the top speed is 255 kms./h. (160 m.p.h.), and the climb to 3,000 m. is made in 5½ minutes, while the climb to 5,000 m. takes but 13 minutes.

The Fokker C.VI is an artillery-spotter (two-seater), with Hispano-Suiza engine.



A MILITARY FOKKER MONOPLANE: The D.XIV was put through its test flights at the Schiphol aerodrome last week. Note the wide undercarriage and the absence of a tail fin.

THE POSITION OF THE AIRSHIP IN AERIAL TRANSPORT

THE paper under above title, read by Commander C. D. Burney, C.M.G., M.P., R.N., before the Institution of Aeronautical Engineers on April 24, proved a most interesting one, and as was to be expected the attendance was considerably better than usual. The lecturer put his case extremely well and very logically, and if he devoted a large proportion of his time to the subject of the mooring mast, few will probably quarrel with him on that score, as the mast must necessarily figure largely in any airship scheme, whatever type of mast is ultimately chosen. For all his force of argument and logic of presenting his case, Commander Burney failed, we think, to convince his audience entirely that the "forked" type of mast mooring is technically sound, and the discussion which followed the lecture seemed to indicate that the consensus of opinion is still in favour of the so-called Air Ministry type of mooring, *i.e.* point mooring from the extreme bows.

Lieut.-Col. J. T. C. Moore-Brabazon, M.C., M.P., was in the chair, and after reading a letter from Air-Commodore Halahan, regretting unavoidable absence, he called upon Commander Burney to read his paper.

Commander Burney pointed out how rapid was progress in airship development, stating that when he dictated his paper a few weeks ago it was true to say that apart from the flight of Z.R.3 there had been little recent operation of airships. Since then we had had the R.33 experience the other day, but into that he did not propose to go. Concerning the Airship Guarantee Company's ship, the R.100, Commander Burney pointed out certain new improvements in design which it was hoped to effect. First of these was the streamline shape of the airship, with control car in the nose of the vessel. Second, the new method of mooring by "forked" as against "point" contact; and third and fourth the use of hydrogen-kerosene engines and improvements in structural design and wiring.

Under the first section—that of streamline shape—the lecturer stated that the new design marked an advance on previous work in the attainment of complete streamline form by the elimination, so far as possible, of all external projections from the envelope. To this end all passenger cars, control cars, and observation posts would be situated inside the hull, leaving only the four engine cars suspended below it. Experiments in the wind tunnel at the National Physical Laboratory had shown that these improvements greatly reduced the head resistance, and thereby tended to increase the speed of the vessel by about 20 per cent.

It must not be assumed that the reduction in resistance was only that obtained by the subtraction of the resistance of the control car as an independent unit, or of an engine car as an independent unit. It had been found that a much greater total effect was produced upon the resistance of the ship as a whole by disturbing the streamline in the front part of the vessel. After all obstructions which might deflect and disturb the streamline flow were removed from that part of the vessel which was in front of the maximum diameter, the actual improvement would be considerably greater than would be obtained if the same number of obstructions of the same kind were removed from the after-part of the vessel.

As soon as this effect was realised it was evident that all improvement in design must tend towards a perfectly clean shape for the foremost part of the vessel, and therefore it was essential that arrangements should be made to eliminate the control car from the normal position. The best alternative position was the nose of the ship, but there was a difficulty in utilising this space for the control car so long as the type of mooring mast known as the Air Ministry type was to be used for mooring the ship. This type of mooring mast necessitated a strengthened nose to take the fitting which connected with the mooring mast. A new type of mooring mast was accordingly devised, which freed the nose space for the purpose of providing room for the control and observation car. At the same time this new design had the advantage of holding the ship from two points instead of from only one point.

This development brought out quite clearly that the design of the ship and the design of the mooring arrangements were interdependent, and therefore any policy of commercial development should, if it was to be efficient and satisfactory, contain the condition that control and direction of the bases should be in the same hands as the control and direction of the ships themselves.

Another factor which had been carefully considered in regard to the development of a standard type of mooring mast had been the desirability of developing a type which would be equally suitable for land work and for sea work. It might be said that the two most important functions of airships for the British Empire were in connection with the development of aerial communications, and in relation to the provision of an auxiliary reconnaissance force that could, in time of national emergency, co-operate with the British Fleet.

So far as experiments with mooring masts had been carried out, it had been found that before the final connection between the moving ship and the fixed mast was made the ship should be controlled by a triangulated system of wires. In the Air Ministry type of mooring this was attained by utilising side guys dropped from the ship and secured to bollards, perhaps a thousand feet from the base of the mast. Obviously such a system could not be used when it was desired to moor an airship to a naval vessel, for the simple reason that fixed points at a radius of a thousand feet from the base of a floating mast would not be available.

In the new type of mooring mast the triangulated system was obtained by having position of attachment for the side guys borne by two arms, capable of being swung horizontally on a revolving platform at the top of the mast.

This system had a further advantage: the whole system could be rotated. Thus, the difficulty of providing for the case in which the airship approached a floating base at an angle relative to the floating vessel was overcome by the simple rotation of the system to accommodate the line of approach of the airship.

Hydrogen-Kerosene Engines

Concerning the power plant which it is proposed to use on the R.100, Commander Burney stated that after going carefully into the question they had decided in favour of the hydrogen-kerosene engine rather than the heavy-oil engine. The introduction of this type of engine was not claimed as being entirely new, as Mr. Ricardo had experimented with it for some years past. The advantages of the engine were twofold: firstly, by utilising hydrogen, which would otherwise be expelled from the airship in order to compensate for the weight of fuel used, it was possible to economise in fuel consumption in two directions: each pound weight of hydrogen contained some 40,000 B.T.U.'s as compared with 20,000 B.T.U.'s of kerosene, and as the ratio of the lift of hydrogen to its weight was approximately 14 to 1, they immediately obtained a reduction in the amount of kerosene required, by one-seventh. Secondly, other conditions allowed of the saving of fuel to be still greater, since a heat cycle could be employed in the engine which gave a higher thermal efficiency than would otherwise be possible.

Turning to the effect upon the performance of a vessel embodying these developments as compared with one of the same size which did not, the lecturer said the result was very striking. Briefly, with the same capacity to carry a useful load, the radius of action of the vessel was exactly doubled. From a careful analysis it was expected that the Airship Guarantee Company's vessel would be able to carry 140 passengers and 7 tons of mail at an average speed of 70 m.p.h. for a distance of 3,500 miles.

It must be remembered in making calculations of this kind it was necessary to analyse the temperature conditions upon the route that it was proposed to operate, otherwise a considerable over-estimate of performance might be made. For instance, if a mooring station was to be situated at Baghdad, there were conditions of temperature and barometric pressure that would reduce the lift of the vessel some 13 to 15 tons, in comparison with the "standard" conditions adopted as a basis of calculation in England.

It was easy to visualise, therefore, that a development of this character must necessarily imply a reconsideration of the route between England and New Zealand. In order to fly from England to New Zealand with a full load in the shortest possible time, only three intermediate stations need be made, and, subject to commercial considerations, these stopping places should be as nearly as possible upon the arc of a great circle drawn between England and New Zealand. It would be found that the most favourable positions were Baghdad, Colombo, and Freemantle or Perth, in Australia. Operating upon such a route it should be possible to average a speed of 70 m.p.h. if the top speed of the airship was about 90 m.p.h. Under these conditions the time taken would be as follows:—

	Hours.
England-Baghdad	37
Baghdad-Colombo	41
Colombo-Perth	51
Perth-Wellington	38

The total time between England and Australia would, of course, be increased by the duration of time taken at Baghdad and Colombo for refuelling, but it would seem possible that the trip to Freemantle should be made in about 6½ days.

The Discussion

The Chairman, in opening the discussion, said that whatever Commander Burney tackled he always did it with salt spray in his eyes. Personally he (Col. Moore-Brabazon) preferred to look upon the airship question entirely from the commercial point of view. He had listened with great interest to the lecture, and there were one or two questions he would like to ask the lecturer. He had stated that the fineness ratio of R. 100 was to be as low as 5½ to 1. This was much lower than any hitherto attempted in rigids, and he would like to find out something about the reasons for the choice of such a low ratio. He congratulated the lecturer on having made so clear the advantages of using hydrogen as a fuel in conjunction with paraffin or kerosene. The lecturer had devoted a good deal of time to the question of the mooring mast, but this was, he thought, quite right, since, whatever system came into general use, the mooring mast would be a very important part of the equipment of an airship service. He was somewhat doubtful concerning what the lecturer had stated about the weight of the mooring mast arms, which weighed 18 tons, and might be expected to impose severe stresses on the airship structure. He did not altogether like the idea of having the control car in the extreme nose of the airship, as this position was, it would seem, somewhat risky, the nose being the first thing to foul the mast in case of accident. He then read a letter from Commander Boothby in which he (Commander Boothby) stated that he did not agree with placing the control position in the nose. The control position should be aft, and a look-out could be placed in the nose. The "forked" mast would, he thought, be too heavy a mass to be moved about. He agreed with the use of hydrogen-kerosene engines.

Lieut. Olechnovich wanted information relating to the controllability of a perfectly streamline ship of low fineness ratio, as he was under the impression that such a ship was difficult to control.

Lieut.-Col. Lockwood Marsh did not think the lecturer was quite justified in stating that on every occasion nose-mooring had failed, and recalled certain mooring experiments at Barrow, where the two types were tried. The nose mooring was, he thought, designed by Mr. Wallace, and the forked mooring by Masterman. The latter was produced for non-rigids only because it had been found that the nose stiffeners of the Parseval type tended to break and to tear the fabric. Personally he thought the nose-mooring had shown itself strong, and he recalled that rigids had been moored at Pulham in winds as high as that which recently caused R. 33 to tear away. He did not altogether like the forked type of mooring, and thought it might tend, as the ship rolled, to wrench the nose off. With reference to the suggestion to place the control car in the extreme nose, he thought that placing a fairly heavy body (some 3 or 4 tons at any rate) where it could not be supported by gas cells must stress the framework, and he also agreed with Lieut.-Col. Moore-Brabazon that the nose was a somewhat risky position during mooring operations. The external control car enabled the pilot, by leaning out slightly, to see at any moment which engines were running, and gave him an opportunity of a good look all around. Turning to the airship route outlined by the lecturer, he wanted to know why Colombo had been chosen, as it would seem that it was essential to land the passengers in India itself. In conclusion he congratulated Commander Burney on the very plucky fight he had put up on behalf of airships.

Major C. C. Turner asked the lecturer to give the dimensions of the base of the mooring mast, and he would also like to know the reasons for choosing Baghdad as a stopping place. He would have thought that Karachi and Calcutta would have been better.

Dr. A. P. Thurston said the lecturer had made out a very good case for airships, and he thought that if they had done nothing else, the development of the hydrogen-kerosene engine would be worth all the money spent, since it was applicable to many other branches where internal-combustion engines were used. He had been impressed by the facility with which ships were brought through the Panama Canal, four electric locomotives being anchored to the ships and running them through in no time. He thought a similar idea, with the "locos" mounted on rafts, might be adapted for bringing airships to the mast at sea. He would like to know if experiments had been made with the use of shields to provide a backwater at the top of the mast, forming a cone layer into which the airship was drawn.

Mr. Colebrook asked whether the distance of the points of attachment in the suggested forked mast would be sufficient to stop rolling. In the ground mooring mast with point mooring the guy ropes were each about 1,000 ft. from the base, giving a total of some 2,000 ft. In the R.100 it was suggested to place the points of the arms 50 ft. apart, and it might be thought that this short distance would not be sufficient to prevent the ship from rolling.

Commander Burney, in replying to the various points raised, said the Chairman had referred to the salt spray in his eyes. The position was that he (Commander Burney) had, in order to get their support, to convince the Admiralty of the advantages of the naval side of the airship question. Concerning the low fineness ratio, he said experiments in the wind tunnel had shown that for a given capacity the hull with a low fineness ratio offered less head resistance. Concerning the weight of 18 tons at the top of the mast, they were not afraid of trouble on that score. By removing the gun turrets from a monitor and putting a mast of about 150 ft. in length on instead, the metacentric height had been raised 1 ft. 6 ins. Commander Boothby had referred in his letter to an international conference some years ago at which the airship experts of many countries were present, and at which the point-mooring had been accepted. Well, they had had a conference three months ago, at which Dr. Eckener was present, and, subject to certain tests being satisfactory, that conference had accepted the forked type.

As to the controllability of a streamline ship of low fineness ratio, so long as the fins were placed in the correct position there was no difficulty. Concerning the strength of the ship to take rolling stresses, the distance of 50 ft. had been estimated to be ample. The overhanging control car in the nose was not a serious item, as the nose had to be strong for mooring in any case. He was aware that airships had ridden out gales at the mast, but it was not fair to say that they had succeeded simply because they did not actually tear away, as the girders were badly strained.

Turning to the choice of route, Commander Burney said that it was useless to expect much assistance from India, and that so far all that Inda had done was to let the material for the airship stations be imported free of duty. Australia and New Zealand were the countries which counted, and therefore the route had been planned along a great circle to reach them in the shortest possible distance. Colombo was, in any case, already connected with the large Indian cities by railway, and it would, therefore, be easy for passengers to reach them from an airship station in Ceylon. As regards trouble of the rolling of the monitors carrying the mooring masts, it was not suggested to moor these in rough water but in sheltered bays or harbours, and in most cases they would probably be run up on the mud. The great point was to make the masts mobile.

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Personals.

Married

Flight-Lieut. R. STANLEY AITKEN, M.C., A.F.C., R.A.F., only son of Mr. and Mrs. Robert Aitken, lately of Stanmore, Middlesex, was married on April 6 at St. Paul's Cathedral, Malta, to ENA, only daughter of the Rev. and Mrs. D. JACKSON TWEEDIE, of The Manse, Stichill, Roxburghshire.

A marriage has taken place between Flying Officer S. T. B. CRIPPS, D.F.C., R.A.F., son of the late Mr. S. B. Cripps, of London, and Mrs. S. B. Cripps, of Villa Léonie, Boulevard Carnot, Nice, and Miss MARGARET MCKENNA, eldest daughter of Dr. W. J. McKenna and the late Mrs. W. J. McKenna, of St. Judy, Bodmin, Cornwall.

Flying Officer S. L. HOPE POTTER, son of the late Dr. John Hope Potter, of Porlock, Somerset, and nephew of Archdeacon Beresford Potter, of Rake Manor, Melford, Surrey, was married on April 29 at St. Deny's Church, Sleaford, to DOROTHY, daughter of Mr. S. PATTINSON, J.P., and Mrs. PATTINSON, Westholme, Sleaford.

Item

SIR SAMUEL HOARE, the Air Minister, and Mr. Amery, the Colonial Secretary, have arrived in Jerusalem by air from Baghdad.

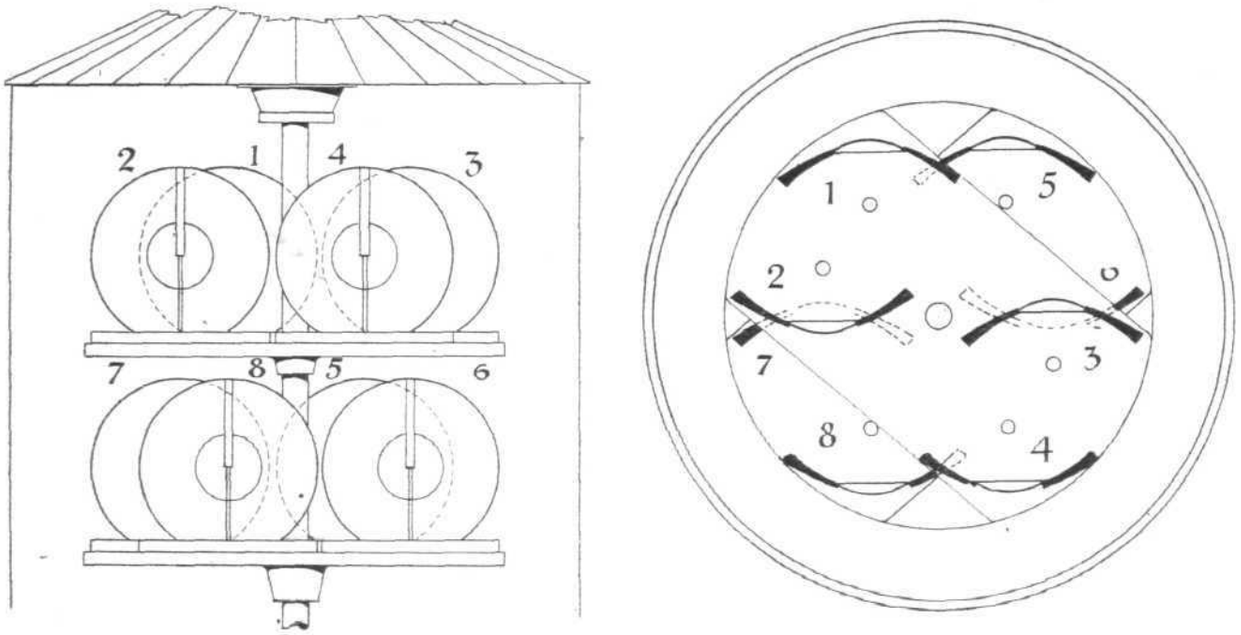
THE DIJON AERIAL LIGHTHOUSE

WHAT is undoubtedly the largest and most powerful lighthouse in the world has just been completed near Dijon, in the centre of France. Work on this lighthouse was started in 1918, by order of the French General Staff, and it was originally intended to serve as a guide for the night bombing squadrons in returning to their bases. Its construction, however, was interrupted by the Armistice, and it was not until about two years later that it was decided to complete the work and employ this huge lighthouse for commercial aviation.

Erected on Mont Afrique, on the Plateau of Dijon, its 1,000,000,000 candle-power light will, it is claimed, be visible, under favourable conditions, at distances nearly 500 miles away, but its normal range may be taken as being about 300 miles. Thus, aircraft flying at an altitude of 500 ft. can pick up its revolving beams from the English Channel, Dieppe, Brussels, Frankfurt, Milan, Marseilles, Toulouse, Bordeaux, etc. It will, therefore, be of considerable assistance to night-flying aircraft operating not only between Paris and Algiers—for which it is mainly intended—but those flying to and from Central Europe, for Dijon forms the junction of the Paris-Switzerland, Paris-Italy, and Paris-Mediterranean air routes.

As regards the lighthouse itself, which has been built and designed by the famous French optical firm of Barbier, Bernard and Turenne, of Paris, a detailed description of the actual Dijon Beacon was published in FLIGHT for January 26, 1922. We do not, therefore, propose giving this week more than a brief outline of the principal features of this wonderful lighthouse.

The thousand-million candle-power is obtained from powerful electric arcs, automatically adjusted and formed between horizontal carbons, surrounded by eight large lenses which are arranged in a somewhat unusual, but ingenious, manner. The eight lenses—each of which is composed of seven dioptric (refracting) and ten catadioptric (refracting and reflecting) elements—are divided into two groups of four, the axes of the two groups being opposed. The four beams of light from the four lenses of each group, however, converge to form one large beam. This arrangement of the lenses will be made clear by the accompanying diagram.



THE 1,000,000,000 CANDLE-POWER AERIAL LIGHTHOUSE : Diagrammatic elevation and plan showing the arrangement of the eight lenses into two opposed groups. They are mounted on two revolving platforms, and the beams from 1 and 3 on the upper platform converge with those from 5 and 7 on the lower platform and from one beam, while the beams from 2 and 4 (top) converge with the beams from 6 and 8 (bottom), but in the opposite direction.

It will be seen the lenses are carried on two platforms, two lenses of each group being on the top platform and the others being on the second. Below the two platforms carrying the lenses is a third platform for carrying spare lamps, control mechanism, etc., and all three platforms are mounted on a central revolving shaft. The three platforms, etc., are surrounded by an 18-ft. diameter house, the upper portion opposite the lenses consisting of a double tier ventilated lantern. Each of the lenses, it may be mentioned, is about 5 ft. diameter, while the overall height of the lighthouse is over 30 ft.

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Relative Rank in the R.A.F.

THE Admiralty announces that commissioned officers of the Royal Navy, Army, and Royal Air Force will, in future, rank with one another, according to seniority or date of appointment, as follows :—

Royal Navy.	*Army.*	*Royal Air Force.*
Admiral of the Fleet	Field-Marshal ..	Marshal of the Royal Air Force
Admiral	General	Air Chief-Marshal
Vice-Admiral ..	Lieutenant-General	Air Marshal
Rear-Admiral ..	Major-General ..	Air Vice-Marshal
Commodore, 1st and 2nd Class	(Colonel-Commandant)	
	(Colonel on the Staff)	Air Commodore
Captain	Colonel	Group Captain
Commander ..	Lieutenant-Colonel	Wing-Commander
Lieutenant-Commander	Major	Squadron-Leader
Lieutenant ..	Captain	Flight Lieutenant
Sub-Lieutenant ..	Lieutenant ..	Flying Officer (or Observer Officer)
Commissioned Officer from warrant rank	Second Lieutenant	Pilot Officer.

C.A.S. at Cambridge

ON April 29 Air Chief-Marshal Sir Hugh Trenchard, Chief of the Air Staff, delivered a most important address to the Cambridge University at the invitation of the Cambridge University Aeronautical Society. The address was a very long one, and questions of space and time prevent us from publishing it this week. We hope, however, to publish the main points in next week's issue of FLIGHT.

FLIGHT

THE ROYAL AIR FORCE

London Gazette, April 21, 1925

General Duties Branch

The following are granted short service commns. as Pilot Officers on probation, with effect from, and with seny. of, March 31 :—H. R. Bardon, M. Brunton, P. Clavell-Blount, E. L. Cowan, I. E. C. Dale, D. de Robeck, A. R. Dunlop, W. J. R. Early, F. W. Field, S. A. B. Harries, F. H. Hannaford, W. J. Kelly, G. J. C. Mahony, R. Matheson, H. Peck, T. H. Perry-Keene, T. H. Rowlands, V. C. Taylor, R. R. Turner, W. G. W. Fahey, H. A. M. Weir.

Lieut.-Cmdr. A. A. L. Miller, R.N., is granted a temp. commn. as a Squadron Leader on being lent for two years' duty with R.A.F. ; Mar. 31.

The following Pilot Officers are promoted to rank of Flying Officer :—T. W. G. Cattell ; Dec. 15, 1924. J. W. New ; Jan. 14. Y. W. Burnett, J. S. Dick ; Feb. 9. H. M. S. Wright, R. Barrett, P. R. Stroud ; Feb. 16. R. Melbourne ; Mar. 15. Flight Lieut. C. R. Richardson (Capt., E. Yorks R.) is re-secd. for two years' duty with R.A.F. ; April 8. Flying Officer P. R. Cawdell is transferred to Res. Cl. A ; Mar. 27. Flying Officer G. A. Atkinson is transferred to Res., Cl. C. ; Mar. 22. Flying Officer P. J. Phelan (Lieut., Ind. Army, retd.) relinquishes his short service commn. on account of ill-health ; April 7.

The following resign their short service commns. :—Flying Officer C. S. Hartung ; April 8. Pilot Officer A. S. Hutton ; April 4.

Medical Branch

Flying Officer H. W. D. Mackenzie, M.B., ceases to be secd. to the Royal Infirmary, Edinburgh ; April 1.

Reserve of Air Force Officers

The following Pilot Officers are promoted to rank of Flying Officer :—R. A. Coulthurst ; Feb. 14. P. J. Waller ; Feb. 19. H. C. Norman ; Mar. 2. H. W. Petter ; Mar. 16. J. G. Webster ; Mar. 16. A. G. Squire ; Mar. 18. C. A. Jamblin ; Mar. 18. J. W. Bowler ; Mar. 23. G. Fitz-G. Atkinson ; April 1.

Flight-Lieut. W. R. S. Humphreys, A.F.C., is empld. with Regular Air Force for a period of two years ; Mar. 31. Flying Officer A. G. Lambert is confirmed in rank ; April 21. Flying Officer A. MacKenzie is transferred from Class C to Class A ; April 21. Flying Officer G. Cameron is transferred from Class A to Class C ; April 21. Flying Officer J. Piggott is transferred from Class B to Class C ; April 21. Flying Officer J. Robertson is transferred from Class B to Class C ; Jan. 5. The commission of Pilot Officer on probation N. G. Durham is terminated on cessation of duty ; Mar. 21.

Memorandum

Flight Lieut. L. W. Hunt relinquishes his honorary commission on ceasing to be empld. under the Directorate of Works and Buildings ; Jan. 5.

London Gazette, April 24, 1925

General Duties Branch

Pilot Officer E. C. Dearth is promoted to rank of Flying Officer ; April 15. The seny. of Flying Officer J. C. Hill in that rank is antedated to Dec. 10, 1923. Flight Lieut. D. W. Grinnell-Milne, M.C., D.F.C., is placed on half pay Scale B ; April 14. Pilot Officer H. R. F. Baxter is placed on half pay, Scale A ; April 16. Flying Officer J. F. Horsey is transferred to Reserve, Class A ; April 10. Sqdn. Ldr. B. P. H. de Roeper, A.F.C., is placed on the retired list ; April 16. Flying Officer S. R. Boldero relinquishes his short service commn. on account of ill-health ; April 15.

Stores Branch

Flying Officer A. J. Grant resigns his short service commn. ; April 15.

Medical Branch

Flight Lieut. F. E. Johnson is granted a permanent commn. in rank stated ; April 15. Flight Lieut. R. H. Wace, M.B., relinquishes his temp. commission on ceasing to be employed ; Mar. 28.

Reserve of Air Force Officers

Pilot Officer J. D. Parkinson is promoted to the rank of Flying Officer ; April 9.

Princess Mary's Royal Air Force Nursing Service

Miss V. L. Crampton resigns her appointment as Sister ; Mar. 3.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

General Duties Branch

Wing Commanders : E. L. Tomkinson, D.S.O., A.F.C., to H.Q. Coastal Area pending disposal ; 1.5.25. A. B. Gaskell, D.S.C., to Air Ministry for Tech. Staff duties ; 4.5.25. D. C. S. Evill, D.S.O., A.F.C., to R.A.F. Staff College, Andover, for duty as Instructor ; 4.5.25.

Squadron Leaders : F. H. W. Guard, C.M.G., C.B.E., D.S.O., to Inland Water Transport, Iraq ; 1.4.25. C. J. Mackay, M.C., D.F.C., to R.A.F. Depot ; 19.3.25. W. W. Hart, M.B.E., to Electrical and Wireless Sch., Flowerdown ; 2.5.25.

Flight Lieutenants : A. W. Clemson, O.B.E., D.S.C., and D. C. Balfour, to Inland Water Transport, Iraq ; 1.4.25. G. E. Godsave and A. R. Churchman, D.F.C., to Headquarters, Iraq ; 1.4.25. L. V. Hirst, to No. 4 Armoured Car Co., Iraq ; 1.4.25. A. S. Maskell, to R.A.F. Base, Calshot ; 4.5.25. W. E. Somervell, to School of Army Co-operation, Old Sarum, instead of to No. 2 Sqdn., as previously notified ; 19.3.25.

Flying Officers : R. V. Bramwell-Davis, to Basrah Group H.Q. ; 1.4.25. H. J. Soper, C. C. Clark, J. Rodger, D.S.M., W. Gill, J. H. Slater, M.B.E., and F. H. Bedford, M.C., M.M., to Inland Water Transport, Iraq ; 1.4.25. F. B. Young, to No. 5 Armoured Car Co., Iraq ; 1.4.25. L. H. Cooper, to No. 6 Armoured Car Co., Iraq ; 1.4.25. J. C. Jeffrey, M.C., to No. 4 Armoured Car Co., Iraq ; 1.4.25. C. J. Watson, to H.Q., Iraq ; 1.4.25.

Flying Officers : V. Croome, to Sch. of Tech. Training (Men), Manston ; 27.4.25. O. E. Worsley, to Marine Aircraft Experimental Estabt., Felixstowe ; 4.5.25. E. R. Hockaday, to remain at Air Ministry instead of to No. 1 Stores Depot, as previously notified. E. C. Delamain, M.C., and A. F. Lingard, to No. 5 Flying Training Sch., Sealand ; 27.4.25. E. H. M. David and F. E. Nuttall, to No. 2 Flying Training Sch., Digby ; 27.4.25. H. S. Davidson, to No. 29 Sqdn., Duxford ; 27.4.25. (Hon. F/Lieut.) W. F. R. Gough, to No. 41 Sqdn., Northolt ; 27.4.25. R. N. Waite, to R.A.F. Cadet College, Cranwell ; 27.4.25. J. G. Hawtrey and A. G. Hill, to No. 1 Flying Training Sch., Netheravon ; 27.4.25. (Hon. F/Lieut.) R. S. T. Fleming, to No. 3 Sqdn., Upavon ; 27.4.25. F. H. Woolliams, to No. 17 Sqdn., Hawkinge ; 27.4.25. H. V. Kerckhove, M.C., to No. 19 Sqdn., Duxford ; 27.4.25. G. R. M. Clifford, to No. 111 Sqdn., Duxford ; 27.4.25.

Pilot Officers : T. W. G. Cattell, to No. 3 Sqdn., Upavon ; 27.4.25. E. C. Dearth, to No. 9 Sqdn., Manston ; 1.5.25. The undermentioned Pilot Officers are all posted on appointment to Short Service Commns. (on probation) with effect from 31.3.25 :—H. R. Bardon, E. L. Cowan and W. J. R. Early, to No. 12 Sqdn., Andover. M. Brunton, D. De Robeck and H. Peck, to No. 111 Sqdn., Duxford. P. Clavell-Blount, S. A. B. Harries and T. H. Rowlands, to No. 9 Sqdn., Manston. I. G. E. Dale, A. R. Dunlop and V. C. Taylor, to No. 17 Sqdn., Hawkinge. F. W. Field, G. J. C. Mahony and T. H. Perry-Keene, to No. 41 Sqdn., Northolt. F. H. Hannaford, R. R. Turner and W. G. Wainwright Fahey, to No. 99 Sqdn., Bircham Newton. W. J. Kelly, R. Matheson and H. A. M. Weir, to No. 11 Sqdn., Netheravon.

Stores Branch

Flight Lieutenants : F. R. Wilkins, to Inland Water Transport, Iraq ; 1.4.25. F. J. W. Humphreys, to Stores Depot, Iraq ; 1.4.25.

Accountant Branch

Squadron Leader E. W. Gregory, M.C., to No. 3 Stores Depot, Milton ; 21.5.25.

Flight Lieutenants : R. F. C. Metcalfe, to Inland Water Transport, Iraq ; 1.4.25. C. A. Meaden, to No. 111 Sqdn., Duxford ; 16.4.25. H. G. Bushell, to R.A.F. Base, Leuchars ; 7.5.25. W. Rollinson, to H.Q., Coastal Area ; 28.4.25.

Flying Officer C. W. Price, to H.Q., Accountant Office, Iraq ; 1.4.25.

Flying Officers : D. B. Smith, M.B., to Sch. of Tech. Training (Men) Manston ; 18.4.25. G. J. Griffiths, to Inland Area Aircraft Depot, Henlow ; 27.4.25.

Medical Branch

Squadron Leader.—P. M. Keane, D.P.H., to H.Q., Coastal Area ; 22.4.25. D. Blair (Dental), to H.Q., Inland Area ; 8.4.25. A. F. Rook, M.R.C.P., D.P.H., to Palestine, General Hospital. 11.4.25.

Flight Lieutenants.—T. J. Thomas, M.B., to R.A.F. Hospital, Cranwell ; 21.4.25. T. M. Walker, to No. 1 Sch. of Tech. Training (Boys), Halton ; 21.4.25. T. C. St. C. Morton, M.D., D.T.M., and H., to R.A.F.Depot (Non-effective Pool), on transfer to Home Estabt. 24.3.25.

Flying Officers.—H. W. D. Mackenzie, M.B., to Research Lab. and Med. Officers' Sch. of Instruction, Hampstead ; 1.4.25. C. J. Griffiths, to R.A.F. Depot ; 6.4.25. T. W. Wilson, to Inland Area Aircraft Depot, Henlow ; 31.3.25. P. H. Musgrave (Q.Mstr., Medical), to No. 1 Sch. of Tech. Training (Boys), Halton ; 7.5.25. D. B. Smith, M.B., to R.A.F. Depot. 17.4.25.

"The Measurement of Upper Wind Velocities by Observations of Artificial Clouds"*

THIS paper gives the theory and practical details of the method of obtaining upper wind velocities from observations of clouds in a mirror. The apparent path of a cloud is traced on the surface of a Hill mirror, and from the length of the trace on the mirror the wind velocity at the height of the cloud is computed by simple multiplication by the use of a table of factors given in the text. The method was first used with shell-bursts during the war, but the paper describes how it has been extended to include observations of clouds discharged from aeroplanes. Tables are given to enable the pilot to correct his height to the necessary degree for any readings of his altimeter and thermometer. The method is extremely simple in use. Copies of the paper can be obtained at all branches of His Majesty's Stationery Office, or through any bookseller.

* Meteorological Office Publication, by C. D. Stewart, B.Sc. Professional Notes No. 38, price 9*d.* net.

Aero Golfing Society

THE spring meeting of the Aero Golfing Society will be held at Worplesdon Club, near Woking, on Thursday, May 7. The programme will be as follows :—

Morning.—Medal round for the Aero Golfing Society Spring Challenge Cup (presented by the Proprietors of FLIGHT). Runner-up, Society prize.

Afternoon.—Bogey four-ball foursomes. Society prizes.

Mr. F. Cumbers, a member of the Society, will present the following additional prizes :—Morning : Medal round, first nine holes and second nine holes ; afternoon : Bogey, first nine holes and second nine holes.

Members may select their partners for the afternoon round, and it is understood they play together in the medal round in the morning Couples fixing up should notify the Secretary beforehand. Members requiring partners should also notify the Secretary. The first couples will tee off at 10.30 a.m.

AIR POST STAMPS

By DOUGLAS B. ARMSTRONG

Rio–Buenos Aires Air-Post Covers

THE important flight from Rio de Janeiro in 48 hours by Capt. Roiz of the Latecoere Co., on January 13-15, has provided one of the most interesting of present-day air-post covers. Letters carried on this flight were enclosed in souvenir envelopes impressed with the Argentine and Brazilian flags, accompanied by the inscription "Premier Courrier Aerien-Rio-Montevideo-Buenos Aires" at the top; and at the foot "Voyage Etude, Lignes aeriennes Latecoere." Postage was prepaid by the ordinary 200 reis stamp of Brazil, which, by coincidence, bears a design symbolising Aviation. On receipt at Buenos Aires, however, the letters were stamped with a special cachet inscribed "Via Aerea 15 Enero 1925, Buenos Ayres." The mail carried on this occasion was not large, and there will be, in all probability, insufficient covers to supply the demands of the ever-growing army of air-post enthusiasts.

French Aero Club's Stamp

A VERY striking vignette depicting a figure of Icarus in flight has been prepared by the French artist Becker to the order of the French Aero Club, for a semi-official air-post stamp that is to be used solely upon the Philatelic Aviation Day in connection with the forthcoming International Stamp Exhibition in Paris (May 2-12). Printed in four different colours, by the heliogravure process, it bears at the top the words "Journee Philatelique d'Aviation," and at the foot, "Le Bourget Mai 1925." Particulars of the circumstances under which it is to be used have already appeared in this column.

America-Bermuda Flights

LETTERS dropped at Hamilton (Bermuda) by the airship Los Angeles, on her recent circular trip from Lakehurst, U.S.A., showing the special cachet used on that occasion, are now being offered for 10*s.* apiece.

Polar Flight Stamps

WHATEVER may be the outcome of Amundsen's attempted flight to the North Pole, air-post collectors will be able to treasure mementos of the event in the form of the souvenir postcards with their private stamp (impressed) showing an aeroplane flying over the Arctic regions, which are to be carried on the expedition and despatched from Spitzbergen on the return journey. Numbers of these cards, sent in from all parts of the world for transmission by Polar air post, have been lying at the Christiania post office since the postponement of the original flight last year, having been sold in America, Scandinavia, etc., in aid of the expedition funds.

A set of particular air post stamps for use in franking these cards, etc., has further been provided by the Norwegian government in seven denominations, *viz.*, 2, 3, 5, 10, 15, 20 and 25 ore, the design representing a Polar bear contemplating an aeroplane flying over an icefield. A proportion of the entire issue, to the face value of 180,000 kronen, has been placed at the disposal of the Air Navigation Association, to be sold to collectors by way of a contribution towards the expenses of the undertaking. Within three hours of the issue of the Norwegian air post stamps, on April 6, the entire supply is said to have been sold out.

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The Aircraft Manufacturing Company

SIR WILLIAM B. PEAT, liquidator of the Aircraft Manufacturing Company, presiding at the meeting of shareholders on April 16, explained that of £450,000 awarded to the company by the Royal Commission £200,000 was received by the company before it went into liquidation, and that of the balance certain sums were due to French interest and others had not yet been made. There was a balance at the bank of £93,102, and the claims against the company might amount to £416,000. That meant that there was 4*s.* 6*d.* in the £ as a first dividend to the creditors, and he proposed, as soon as the formalities had been gone through, to pay a dividend of 4*s.*, or at the most 4*s.* 6*d.*, in the £.

The Italian World Tour

COL. M. DI PINEDO, Chief of Air Staff in Italy, accompanied by his mechanic, started his big aerial world tour on April 21. Flying a Savoia S. 16 ter flying boat (400 h.p. Lorraine-Dietrich), he left Sesto Calende with the intention of reaching Laros, a distance of 1,200 miles. Engine trouble, however, necessitated a landing near Lake Varano, and, later, bad weather prevented further progress that day. The next heard of the flight was that he had reached Baghdad *via* Bushire, and left the former place for Karachi on April 27.

Royal Aeronautical Society

THE Royal Aeronautical Society announces that Mr. J. L. Pritchard has, at the request of the Council, agreed to act as Hon. Secretary of the Society. Mr. Pritchard took up his duties on May 1.

Obituary

WE regret to announce the death, which occurred on April 3, of Mr. Arthur Jacob, M.I.E.E., who was a manager of the British Aluminium Co., Ltd. He had been in poor health for some time, and the end came, somewhat unexpectedly, at his residence at Hatch End, Middlesex, at the age of 57 years.

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SIDE-WIND

OWING to the increase of their business, Aerofilms, Ltd., aerial and commercial photographers, aerial surveyors, etc., have found it necessary to enlarge their premises, and have therefore moved to more commodious offices and works. Their new address is Aerial House, The Hyde, Hendon, N.W. 9, where all communications should now be sent. There is no alteration to the telephone and telegraphic addresses.

* * * *

PUBLICATIONS RECEIVED

Aeronautical Research Committee: Reports and Memoranda No. 928 (*Ae.* 150).—Test of Four Thick Aerofoils, R.A.F., 30, 31, 32, 33. By F. B. Bradfield and A. S. Hartshorn. September, 1924. Price 6*d.* net. *No.* 938 (*Ae.* 159).—A Theory of the Full-Scale Determination of Damping in Roll. By A. S. B. Gates and H. M. Garner. September, 1924. Price 9*d.* net. *No.* 940 (*Ae.* 161).—An Analysis of the Pressure Distribution on a Model Airscrew by Means of the Vortex Theory. By A. Fage. November, 1924. Price 6*d.* net. H.M. Stationery Office, Kingsway, London, W.C. 2.

The History and Development of the Sunbeam Car, 1899-1924. The Sunbeam Motor Car Co., Ltd., Moorfield Works, Wolverhampton.

Royal Automobile Club Guide and Handbook, 1925. The Royal Automobile Club, Pall Mall, London, S.W. 1. Price 3*s.* 6*d.* net.

Air Ministry, Meteorological Office: Particulars of Meteorological Reports issued by Wireless Telegraphy in Great Britain and the Countries of Europe and North Africa. 1925. London: H.M. Stationery Office, Kingsway, W.C. Price 3*s.* 6*d.* net.

Catalogues

Hoods, Fittings and Motor-Car Accessories. The Grafton Engineering Co., Sycamore Grove, New Maldon, Surrey.

Notiziario di Aeronautica No. 3, *March*, 1925.—Commissariato dell'Aeronautica, Direzione Superiore del Genio e delle Costruzioni Aeronautiche, Viale Giulio Cesare, Rome. Price L.50.

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AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1924

Published April 30, 1925

272. LORD INVERNAIRN (W. BEARDMORE) and A. E. L. CHORLTON. I.C. engines employing crank-case compression. (231,587.)
384. F. SCHUH. Aeroplane flying machines. (231,593.)
10,692. E. OTTO. Flying machines. (215,366.)
12,315. MAYBACH-MOTORENBAU GES. Starting devices for i.c. engines. (231,692.)

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